
**IEEE P802.11
Wireless LANs**

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 58th 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, Secretary¹⁾ 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. 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

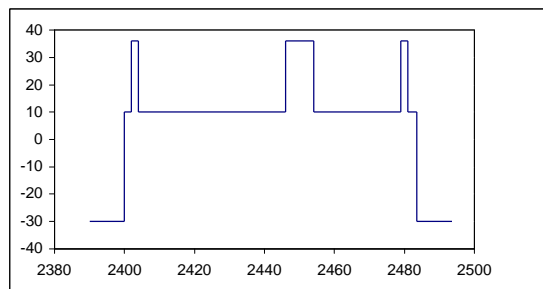
The Chair called for any objections to giving Keith Amundsen substitute participation in the past two meetings. There were no objections.

- (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 59th 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 16th 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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**IEEE P802.11
Wireless LANs**

Tentative Minutes of IEEE P802.11/P802.15 Joint Session

Sonoma Hilton Hotel, Santa Rosa, California

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

Scheduled: 1:00pm – 3:00pm

1. 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.

1.1 Roll call

All present at the start of the meeting introduced themselves. 50 people were present during the session.

1.2 Document list update

Vic Hayes and Bob Heile noted the following new documents of interest to both WGs:

- 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 Faketselis, Jan Boer)
- doc.:802.15-99/097 Venue for May meeting.
- doc.:802.15-99/100 Coexistence study group report.
- doc.:802.15-99/065 CFP

1.3 Agenda update

No new items were added to the business agenda proposed for the Joint 802.11/802.15 meeting.

Vic Hayes explained that votes would be counted separately for each group.

Motion 99/58P08 To approve the agenda as proposed
 Moved Dick Eckard
 Second Harry Worstel

Discussion: none

Motion Passes: 802.11 18-0-0; 802.15 11-0-0.

1.4 Announcements

- There will be a seminar on SDL at 1315 Thursday, hosted by 802.15. All invited.
- Wednesday evening social buses to leave at 1700 sharp.
- 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.

2. Old business

2.1 Liaison officers

Vic Hayes reported that Bruce Kraemer, Stuart Kerry and Peter Murray were appointed as 802.11 liaisons to 802.15 (motion 99/57P24 at the Montreal meeting).

2.2 Review 802.15 Call for Proposals/Participation submissions

Ian Gifford summarised doc.:802.15-99/065 and presented a few slides (28-30) from doc.:802.15-99/63R1. He advised that the Montreal meeting report is doc.:802.15-99/30.

There were 1141 Bluetooth promoters as of yesterday.

Ian reported on a meeting between Bluetooth, the ETSI Secretariat and IEEE on standardization of Bluetooth. The minutes of that meeting are doc.:802.15-99/85. The IEEE pitch used in the meeting is in doc.:802.15-99/87. The gist is that IEEE has engaged in contracts with Bluetooth (see July Standards Bearer re liaison IEEE-Bluetooth). The only standardisation thread proceeding at present in 802.15 is on Bluetooth in TG1, chaired by Ian Gifford.

However, Bluetooth has layers above those addressed by 802 committees. Having a 7-layer standard is compelling - ETSI could handle the upper layers not covered by IEEE.

2.3 Review Joint Regulatory activities

2.3.1 ET Docket 99-231 NPRM Amendment of Part 15 rules

Carl Andren was chair of the ad hoc group formed to review material and formulate letters to be forwarded in regard to FCC NPRM OET docket number 99-231 on processing gain and bandwidth regulation increases to 3 and 5 MHz. Carl summarised the detailed report of discussions by the group (detailed report is doc.:802.11-99/214).

Papers presented to the group were:

- Wideband FH NPRM Discussion (Ben Manny and Jim Lansford) doc.:802.11-99/201
- WBFH Overlap Channels (Jim Zyren) doc.:802.11-99/202
- Effects of WBFH Power Reduction and Hop Rate (Jim Zyren) doc.:802.11-99/203
- Wideband Gaussian Noise (Jan Boer) doc.:802.11-99/204
- WBFH interference (Don Johnson, presented by John Fakatselis) doc.:802.11-99/205
- WBFH and Multipath (Jan Boer) doc.:802.11-99/206

Several unsuccessful motions were put to the ad hoc group regarding proposals to be put to the full working group. One motion requesting referral of the material in WBFH interference to the IEEE EMC (C63) committee for investigation passed 3-2-1 with the vote of the Chair deciding the outcome. A straw poll of this Joint meeting showed general lack of support for such referral.

2.3.2 RF Lighting

No new activity.

2.4 P802.15 Hosted Venue choices

- Mike McInnis spoke to doc.:802.15-99/097. Straw poll results showed a marked preference for the Madisson Hotel with lunches.
- The tentative host for September 2000 is FedEx in Memphis, Tennessee. The tentative venue is a hotel with a Conference Centre in walking distance. There were no alternative venues volunteered.

3. New Business

3.1 802.11 new study group

John Fakatselis reported on discussions to date in the SG for 802.11 enhancements. The aim is to generate candidate enhancement projects and produce an initial draft on objectives. From there in Nov'99 we will write an initial PAR draft, in Jan'00 finalize projects, update PAR, and in Mar'00, finalize the PAR.

John asked for suggestions from 802.15 about enhancements to the 802.11 MAC and noted the schedule for the remainder of this meeting.

It was proposed that we enhance the state diagrams. The potential of these is much higher, including the possibility that they could be enhanced to allow them also to be used to make a model.

One member asked if there has been any discussion about a MAC light. There has been none.

3.2 802.15 new study group on co-existence

Steve Shellhammer spoke to doc.:802.15-99/088r2, the proposed Study Group Charter. It is clear that WPAN and WLAN devices will need to coexist in some cases. The charter addressed:

- Need for coexistence
- Definition of coexistence
- Scope of coexistence task group
- Purpose of the model - traffic, mac, propagation - analysis, simulation, measurement.
- Plan of work
- Coordination with 802.11

Steve also noted doc.:802.15-99/100r0, a report on the SG activities to date. He welcomed input from 802.11 members.

3.3 RFID devices

These devices are a replacement of a BAR-code tag with a device that is RF interrogated. CEPT PT SE24S has requested 5W power limit for their devices in the 2.45 GHz bands.

Radio LANs are non-protected, non-interfering, and so there is little we can do to directly stop this. But there are primary and secondary users - news gathering (ENG/OB) and point-to-point links, including military. The RFID group is now considering limiting its spectral band usage.

If these devices are limited in Europe, the proposal is that we ask for a voluntary limitation to the same area as in Europe. It was noted that the current 2.47 GHz regulation in the USA is +36dBm.

3.4 Next meeting

It was agreed to hold the next Joint meeting of 802.11 and 802.15 in Hawaii, Wednesday 10 November, same time.

4. Closure

The meeting closed at 1453.

**IEEE P802.11
Wireless LANs**

Tentative Minutes of Task Group D

Date: September 15, 1999

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Abstract

Minutes of Task Group D – Regulatory Domains for the week of September 13, 1999.

Bob O'Hara – Chair

September 13, 1999 3:30pm Bob O'Hara opened the TGd meeting session.

Bob started the meeting noting the items on the agenda.
Victoria Poncini secretary for TGd session.
Bob opened the meeting outlining the objective for the meeting
Agenda approval
Presentations
Meeting 99/154 minutes approval from July 99 meeting
Old business

Three submissions for TGd:
99/195 Algorithmically Derived Hop Sequences Darwin Engwer/Johnny Zweig – Nortel Networks
99/xxx Algorithmic determination of Hop Sequences – Dean Kawaguchi Symbol Technologies (presentation delayed until next meeting.)
99/191 Universal Channelization of DS. – Bob O'Hara
99/xxx paper on international mobility - Bob O'Hara (paper not presented)

Bob asked if there was any objection to adopting the agenda?
Victor Hayes moves to approve the agenda
Richard Paine seconds
Any discussion on the agenda? Hearing None.
Motion passes.
Agenda approved by 17/0/0

Second item of business: Bob moved to approve the minutes from July meeting contained in doc: 99/154 TGd minutes
Victor Hayes: moves to approve the minutes
David Skellern seconds the motion
Any discussion? None.
Motion to approve July minutes
Motion to approve doc: 99/154
Approved 14/0/1

Following the minute approval Bob issued a call for additional papers? No additional papers.
Old business: None

Bob started the presentations with 99/195 by Darwin Engwer of Nortel Networks.
Credit to Ken Clements for the deletion of the diagonals. After discussion of the paper Darwin made a recommendation that 802.11 contact Edward Titlebaum to do some work to create a frequency hopping algorithms.

Contact information for Ed Titlebaum. Tbaum@ee.rochester.edu

Bob O'Hara Presentation on Extension of Direct Sequence
Doc number 99/191

Dean general comment: what are we trying to get out of TGd?

- 1) Defining what the standard frequencies or hop sequences are?
- 2) Given an AP how does it know what country it is in? Whatever country it is in?
- 3) Mobile unit how does it know what hop sequence or frequency to use? What about ad-hoc network which frequencies? How does mobile behave in an international environment?

Dean will have paper tomorrow: to address the third case but does not address the ad-hoc case.

Need to address all questions before we are done with Task Group D.

When all questions are answered: Jan Boer

We still have to certify the product in each of the countries in which we plan to operate?

Dean says that Bluetooth working on a greater certification, E1, USA and Canada.

Bob reiterated what needs to be accomplished for TGd to create a draft document:

- o Mechanism to define hop sequences and channels in 2.4GHz
- o Mechanism for providing info to mobiles to run hop or DS channel algorithm to run within
- o Changes to MAC management how a mobile operates that is different and is compliant to 802.11d that can roam internationally rather than operates in only one regulatory domain.
- o How to configure an access point that allows it to pass information on to the mobiles.

Bob suggests that we recess until Tuesday afternoon. Dean will have a presentation on international mobility.
No motion on any additional business. Session broke for the evening.

September 14, 1999 Tuesday Session

At 1:00 pm Bob O'Hara suggested that TGd break up to work in separate subgroups to work on FH and DS channelization.

Nothing formal on the table to discuss for FH and DS extensions

Reconvene at 3:30 to discuss international mobility.

Richard asked that TGd include a discussion concerning 5GHz worldwide spectrum allocation.

No one for FH in the room.

Bob asked if there was any objection to proceeding this fashion? None mentioned. Bob recessed the TGd meeting until 3:30 pm. The meeting broke into discussion group to look at FH and DS channelization

3:30pm resumption of the TGd discussion of international mobility.

Bob asked if any FH discussion took place. None reported.

Report on the DS discussion:

DS PHY summary – create a new information element. Good enough for all but FH hopping requirements.

New Information Element from the DS channelization discussion was presented to the group:

Regulatory domain Identifier, (2 octets)

Lifetime unit (seconds) (1 octet)

Length of sub-elements to follow (length) (1 octet)

Each sub-element contains

First Channel center (2 octets)

Channel spacing (1 octet)

Number of channels (2 octets)

Occupied bandwidth per channel (1 octet)
Max transmit power allowed (2 octets)

Also presented was station Safe default behavior (of power level of 1mW) and IBSS behavior and responsibility and traceability of frequency assignments.

Dean Kawaguchi stated that in the Symbol FH proposal they decided to create another Management Frame. DS was Bob stated that the DS channelization idea was to include the information within the Beacon.

Wideband FH with each 1, 3, 5 each require it's own sub element within the band.

Need to define safe default station behavior for international roaming stations – for non-configured.
-Defined maximum transmit power limitation

Another new info element required for the frequency hopper stuff.

Bob asked for someone to draft up text describing the new information element no one volunteered. Peter asked if anyone knew of information exists in HiperLAN. Peter suggests that we could look at and can copy.

Bob suggests that we recess until 8:30am Wednesday 9/15/99.

Tomorrow move on to new business of 5GHz band and lobby the WRC for a second unlicensed global band.

Meeting recessed until Wednesday 8:30am.

September 15, 1999 Wednesday Session

Bob opened Wednesday morning meeting.

Bob asked if there was any insights or additional suggestions/inputs into international mobility.

Hearing none, Bob moved the meeting to new business.

First order of new business Richard Paine presentation of Worldwide 5GHz adoption.

99/xxx Adoption of Worldwide 5GHz band.

Boeing going to Study Group 8 in November. Boeing requesting 802.11 supports via a letter to SG8 the expansion of the 5GHz band to be another global unlicensed band. Peter asked Tomoki Ohsawa if MMAC would support 5GHz dual use or multi-use of 5GHz band. Tomoki indicated that they would. Bob stated that Richard make motion move that 802.11 submit letters to support the 5GHz unlicensed frequencies.

Richard moved to make motion to have 802.11 send a letter to the US delegation to ITU SG8, and/or WRC supporting the global allocation of the 5 GHz band for unlicensed use.

Second by Peter Ecclesine.

No discussion on motion.

Motion passes

Approval: 10/0/0

Any other new business? None.

Bob will review the TGd session report with the TGd task group.

Bob reviewed report.

Peter Ecclesine made the motion to adopt the report from TGd.

Seconded by Victoria Poncini

Any discussion? None.

Any objection to adopting the report for TGd? Seeing none the report is adopted by unanimous consent to present to the 802.11 Working plenary. Bob adjourned TGd at 09:10am.

**Submission to:
IEEE P802.11
Wireless LANS**

Title: **REPORT FOR Ad Hoc Regulatory issues MEETING OF 9/13/99 to 09/17/99 (Santa Rosa)**

Date: Sept 16, 1999

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**IEEE802.11 Ad Hoc Regulatory Issues
Sept. 13-16, 1999 Santa Rosa**

**SESSION GOAL
Respond to the FCC NPRM 99-231**

September 13, 10:30-12:00

Opened the new group with Carl Andren as Chair and Jim Zyren as temporary secretary on 10:40 h.

Introduction of participants.

Papers on the issues relating to the NPRM presented first and without delay since one of the presenters (Jim Lansford) has to leave at 11:30.

Paper by Ben Manny and Jim Lansford, Intel

Impacts on Home RF of the NPRM on WBFH

A presentation to the 802.11 membership to express the views of the HomeRF working group

Paper presented with a lively discussion from the floor. Presenters declined to present the technical parameters and actual simulations underlying two graphs in the presentation. Due to lack of time by Jim Lansford, and after Jim left, by Ben Manny, due to lack of RF-technical expertise. The IEEE 802.11 chair recollected that at the time of invitation, Ben had indicated that the simulations would be distributed to 802.11 as soon as available. The presentation ended with a call to action by the presenters.

Chair suggests to the group that motions on WBFH be delayed until all papers have been presented.

Lunch held, reconvened after the lunch on Monday September 13, 1999-09-18

September 13, 13:00-15:00

Paper by John Fakatselis, Intersil

IEEE response to the FCC on NPRM 99-231 issues on PG

Asked Carl A. to review text in NPRM pertaining to mathematical calculation of processing gain.

John F. presented alternative positions regarding FCC proposed text on DSSS processing gain

- a. Accept "as is"
- b. Accept only CW jammer test w/mathematical calculation as only test.
- c. Accept "as is" with additional detail on test parameters and mathematical formula

Motion: To accept the NPRM proposal "as is" regarding the DS processing gain test and to prepare an IEEE802.11 letter for submittal reflecting this position.

moved John F/ Jim Z

Discussion

Motion: Postpone vote on Motion by John F until Thursday after discussion

Peter E / John F

Discussion;

Point of Information called by.. Stuart.. Will the passage of this motion permit discussion on this matter to continue. Chair confirms this is so.

18/0/0 Motion to postpone till Thursday passes.

Discussion of DS Processing gain issue ensued.

Chair confirmed the meeting agenda as presented below:Agenda:

presentation of papers

- Ben Manny, Jim Lansford WBFH 99-201**
- John Fakatselis, PG test NPRM response 99-199**
- Jim Zyren, WBFH 99-203, 202**
- Jan Boer, WBGN test 99-204**
- Jan Boer, WBFH and multipath 99-206**
- Don Johnson, WBFH interference 99- 205**

discussion of the NPRM

votes on IEEE 802.11 responses on:

- PG

- WBFH

Other business
Adjournment

Motion to approve agenda
Stuart/Vic

Voting: 20/0/0, motion to approve the agenda passes.
--

The following presentations were given:

Jim Z. 99-202WBFH Overlap Channels
Jim Z. 99-203 Effects of WBFH Power Reduction and Hop Rate
Jan B. 99-204 Wideband Gaussian Noise
Jan B. 99-206 WBFH and Multipath
Don J. 99-205 Interference_potential_of_WBFH

Meeting adjourned at 15:00 h.

Wednesday September 15, 1999

802.11 review of proposed responses to FCC NPRM

Ben Many – Intel presented Paper 99-219

Reviewed background for WBFH

Presented 3 suggested motions:

- 1) Move to recall 1st letter and send in letter of support for WBFH.
- 2) Move to recall 1st letter and remain neutral on WBFH.
- 3) Move to request IEEE's EMC committee to review NPRM interference impact.

Stuart Kerry asked for a point of information from the Chair if all papers would be heard before any motions concerning WBFH. Chair confirmed.

John Fakatselis – Intersil presents paper 99-210r1

Proposal for 3rd letter to FCC on DSSS PG part of NPRM (OET Docket 99-231)

John F. Presented a draft of the letter.

Recommendations:

Support CW jammer with mathematical calculation. Advise that the Gaussian noise interferer test not be added to the rules.

Suggestion by Paul Thompson put forth to state that the new letter addresses the DSSS PG issue and doesn't supercede the 1st letter.

Stated reasons for the IEEE position relative to PG testing.

802.11 has not seen the technical justification for the Gaussian noise interferer and is concerned about how the details for implementing the test are defined.

Request by John Fakatselis to approve the letter with changes as discussed.

Jan Boer requested the Chair to take straw polls for the following motions, to get the room memberships feeling on the issues at hand. Chair agreed to do so.

Took a **straw poll** to approve letter and further discuss on Thursday with the full group.

Result of strawpoll: 11/0/0. There were 3 non-voters included in this straw poll.

Jan Boer – Lucent presents 99-209r1

Proposal for a 2nd letter for filing in the proceedings of the FCC in NPRM, OET Docket 99-231. The letter provides substantive material to support the statements in the first letter filed on August 19, 1999.

The 802.11 Committee has continued to analyze the proposed changes.

Major points from 1st letter: WBFH will result in new interference scenarios.

Additional comments:

- a. DSSS gets a higher throughput without changes to the power spectral density or the FCC rules. Ben Many noted that the PG test required an interpretation of the rules by the FCC.
- b. The IEEE supports HWN's assertion that WBFH will be unable to achieve substantially higher data rates than 1 & 2 Mbps. Motion by Don Johnson to change some wording was adopted.
- c. FH systems limiter front ends work well in 200ns delay spread environments due to frequency diversity. Widening the bandwidth will force the hopper to deal with in band multipath distortion. More motions on word smithing were adopted.
- d. There is a linear relationship between intersymbol interference caused by multipath and the symbol length so widening the bandwidth makes the system more susceptible to multipath. The FH system would need to employ equalization to remain robust offsetting any economic advantage.
- e. Conclusion: FHSS employing 4 level FSK without equalization won't work in a typical environment. Comment by Jim Baker: To reliably transmit data a WBFH system would have to drop back to a lower data rate thus obviating the need for WBFH in the first place.
- f. Other modulation methods that are more robust in multipath can be employed at higher cost. Ben Many commented that in his view it was not appropriate for the

IEEE to comment on cost factors. The comments by the IEEE on cost are in direct response to claims made in the NPRM but a motion by Ben to strike a reference to the Apple Airport announcement was adopted.

- g. Final Conclusion: the claim by HRFWG that WBFH can be implemented at lower cost and with greater multipath robustness than can DSSS systems operating at comparable speeds does not hold and is misleading.

Paul Thompson points out that a much higher reduction in power than that proposed by NPRM is needed to offset the interference effect of the WBFH system. Any mention of specific equipment pricing or costs shall not be made per guideline from the 802 Chair.

Suggestion was made to summarize the main conclusions of the reference papers which was done. Ben Many pointed out that all papers referenced in the letter had analyzed FSK modulations and that a general conclusion about interference scenarios could not be drawn relation to modulation schemes other than FSK. Carl Andren pointed out that while other modulation schemes could be used it would be difficult to achieve the same spectral mask as that for FSK with the same instantaneous bandwidth.

Straw poll, including non-voters, to approve the paper as edited: In favor 9, against 1, abstain 2.

In the spirit of cooperation with the HomeRF Working Goup, Stuart Kerry requested the Chair to make the 3 motions, presented by Ben Manny as separate motions. Each moving to bring before the Plenary :

- 1) **Move** to bring before the Wednesday Plenary in Chairs report, the motion to recall 1st 802.11 FCC letter and send in letter of support for WBFH. Stuart was not in favor but moved nevertheless for the HomeRF Working Group's motion. Vic was not in favor either, but seconded nevertheless.

Procedural motion.

Voting: 1/4/0 Motion to bring to plenary fails.

- 2) **Move** to bring before the Wednesday Plenary in Chairs report, the motion to recall 1st letter and remain neutral. Stuart was not in favor but moved nevertheless for the HomeRF Working Group's motion. Vic was not in favor either, but seconded nevertheless.

Procedural motion.

Voting: 1/4/0. Motion to bring to plenary fails.
--

- 3) **Move** to bring before the Wednesday Plenary in Chairs report, the motion to request IEEE's EMC committee to review the FCC NPRM interference impact papers and publish a report. Stuart was in favor of this motion and moved. Seconded by Vic.

Procedural motion.

Voting: 2/2/1. Chair voted due to tied vote, in favour of the motion, bringing the Vote to 3/2/1. Motion to bring to plenary passes

Therefore the outcome was for Motion 3 only to go before the Wednesday Plenary.

Straw poll on motion # 3 (including non-voters):

Voting: 4/6/2

Motion to adjourn. No objections.

Thursday September 16, 1999

Chair Carl Andren, secretary Bob Pearson, Intersil

NPRM ad-hoc discussion

1) John Fakatselis - Intersil

Motion to modify/amend his motion to read “ to send letter 99-210r2 on DSSS PG issue”.

Moved by, seconded by: John F./Jan B.

Request by the floor to see the modified paper. Paper presented by the Chair.

No further discussion.

Vote: 11/0/0 Motion to modify paper passes
--

Vote on the motion to send paper: 11/0/0. Motion passes!

2) WBFH:

Motion by Don Johnson to send paper 99-209r2 to the FCC. Seconded by Don Sloan.

Request for minor corrections, and word smithing adopted

Vote to send 99-209r2 as ammended to the FCC: 10/0/1 Motion passes
--

Request by Chair for any other business?

Discussion on combining the letters to the FCC. Consensus to not combine but submit, as approved, two papers.

Vic Hayes showed an e-mail from IEEE EMC, i.e., 99-235. IEEE EMC wants to be the forum for the discussion on WBFH.

Stuart Kerry confirmed the 3 documents on the subject had been filed on the server, and were available for the membership :

99-325 e-mail from Chair to IEEE EMC

99-233 & 99-234 Approval for FCC filing July 99 & Sept 99 by IEEE USA VP of technical procedures.

Ad Hoc Chair to make the final edits to the letters, review them with John F., Jim Z. and Vic H. Then get them signed by Vic and Jim Carlo, etc. and send in after approval by the Friday plenary

Ad Hoc regulatory committee is adjourned