

**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)**

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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.
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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.
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- 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
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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
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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