IEEE P802.11
Wireless LANs

Tentative Minutes of the PHY subgroup

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Minutes of the (full) PHY Group,Tuesday Morning Session, 9 November 1993, PHY Chairman Larry Van Der Jagt presiding.
John McKown acting as secretary (again).

Larry's agenda was (1) find a proper chair for the ad hoc group so that Larry can resume as head of the whole PHY group, (2) consider implications of and possibilities for the new PCS bands in the US, (3) miscellaneous submissions.

There were no takers on the chair.

We discussed possible actions relating to PCS. John McKown advocated no actions until resources (interested parties) spontaneously appear within the group. Someone voiced the possibility of asking for rule changes (greater BW) in the ISM bands. Bob Egan offered to copy and distribute the (UPCS) 2nd Report & Order and the associated comments (eventually this was provided courtesy National Semiconductor). We decided to postpone further PCS discussion until that had been done and the etiquette described therein had been read.

Bob Aschatz reviewed the status of NTIA's channel characterization activities. He then read an abstract of a forthcoming document by a colleague, Dr. Spaulding, as per document 93/224.

Larry demonstrated some visualization tools he has constructed for viewing the NTIA data. This led to learned discussion on propagation and modeling. The secretary learned "the Rappaport model" is available as a block in the block diagram-oriented simulator SPW.

Jim McDonald moved and Bob Buaas seconded

MOTION 1: "The PHY group of 802.11 accepts the NTIA data format described in document P802.11-93/41 as the data format to be used in our channel modeling efforts and requests that subsequent data be presented to the group in this format. We intend to keep a library in this format. At this time the library includes the NTIA open office measurements." For=9, Against=1, Abstentions=4. Motion 1 passed.

Paul Struhsaker called for discussion of FH/DS coexistence. A straw poll voted to take up the issue.

BREAK

Paul said he thinks the issue won't be too difficult. "LBT is a given." Paul led a discussion on deference thresholds; fixed, noise riding and fancy. Paul took the view thresholds will be moved about by logic to handle various conditions; he spoke of overrides. Don Johnson cautioned against "threshold fights". John recommended the proposed PCS etiquette for consideration. Bob Buaas reminded that the ISM band has emitters which won't respect etiquettes. Paul said special headers are required in Japan.

Paul and Peter Chadwick discussed absolute power measurements (imposition of which annoys Peter). Paul suggested drafting a communication to the MAC group regarding coexistence. We decided instead to open an issue. Mr X. moved and Mr. Y seconded

MOTION 2: "Is clear channel assessment possible and, if so, how should it be accomplished?" For=18, Against=6, Abstentions=4. Motion 2 passed.

LUNCH BREAK

We resumed at 13:16 with the agenda (1) presentations on packet preamble, i.e., radio headers, and (2) document 93/172, which is Larry's text for the PHY spec.

Peter Chadwick was elected chair of the FH ad hoc group by acclaim. We proceeded as the FH ad hoc group. Peter set the agenda (1) Francois LeMaut presenting 93/182, (2) Shuzo Kato presenting on 93/188, (3) Ed Geiger presenting 93/215, (4) Tim Blaney presenting 93/216, (5) Jim McDonald presenting 93/209.

Francois presented "HDLC-like" delimiters which answer the demand for a Hamming distance of 4 voiced at the previous meeting.

Jerry Socci, Peter and Francois discussed use of a length field vs. delimiters vs. fixed length packets. Roger Jellicoe questioned high quality end delimiters. He said the primary protection mechanism is in the MAC. Francois said what you do in the PHY can reduce workload for the MAC.

Roger asked for quantitation of the trade-off. Francois hasn't done that but expects the effect to be "quite significant." Roger said a collision will wipe out any end delimiter, be it ever so many bytes in length. Larry Van Der Jagt provided context for certain puzzled listeners that delimiters are necessary to indicate which data are to be included in the CRC check calculation. Roger still had reservations about whether the level of effort was appropriate. Francois said the cost of missed delimiters and resulting retransmission is not delt with in the wired literature.

An extended discussion took place between Francois and Roger. The secretary did not capture it. Peter questioned whether the mandated Hamming distance of 4 really made any sense in the wireless case. Ed Geiger considered scramblers generating delimiters. Jerry said a protected length field would be an alternative to delimiters with Hamming distance 4. Francois explained how certain scramblers are not good choices with CRCs of certain lengths.

Jim McDonald proposed a rather complete preamble, including a ramp on/off mask and maximum magnitude slope spec.

Ed and Tim presented even more detail, discussing not just their preamble but also how it is processed.

Shuzo Kato presented two training sequences and suitable unique words to follow them. One training sequence was 0011 and the other was 01. The analysis which justified these assumed windowing or gating the processor by means, e.g., of power detection. For such a processor, either sequence+word combination appeared acceptable in terms of falsing probabilities.

Peter Chadwick said that power detection might not be enough in the 2.4 GHz band. He spoke of "choosing the best oven."

There was learned but inconclusive discussion on the effect on throughput of preamble length.

Jim: is concerned about problems brought to light in the high rate ad hoc goup's deliberations. Do we switch modulation format at a byte boundary? How will a high data rate transmission appear to a default- (mandatory-) rate receiver? Thinks MACs will have difficulty dealing with multiple rates.

Ed Geiger presents 93/216 on scrambling.

End of session.

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Thursday Nov.11,1993-Closing Session PHY group, Chairman Van der Jagt presiding.

The agenda established to be:

1)What happened this week
2)What will happen next
3)What about PCS
4)General Discussion

Each of the subgroup chairs presented results of the weekly meetings.

There was some discussion on the Clear Channel Assesment Issue and on the areas of similarity between the preamble/PHY headers being considered by both groups. It appears that some degree of commonality may be possible in the header formats, especially with regard to the order in which fields occur and the PHY signalling field.

The schedule of the next meeting includes:

Monday AM: 802.11 Plenary
Monday PM: PHY SubGroup until break
Monday PM: FH and DSSS AdHoc groups until evening
Moday Evening: HS Ad Hoc group
Tuesday until after afternoon break: FH and DSSS Ad Hoc Groups
Tuesday after afternoon break: PHY Subgroup
Tuesday evening: IR Ad Hoc Group
Wednesday AM: FH and DSSS Ad Hoc Groups
Wednesday PM: 802.11 full working group
Wednesday Evening: HS Ad Hoc group
Thursday morning until break: FH and DSSS Ad Hoc Groups
Thrusday morning after break: PHY Subgroup
Thursday PM: 801.22 Plenary

The work of the FH and DSSS Ad hoc groups next time will be in editing text, finalizing CAI, closing subissues and looking at CCA issue.

A brief discussion ensued regarding the fact that the presence of a data rate switching problem is slowing the work on the base standard. A decision was reached to look at this problem carefully at the next meeting and determine whether action is required to limit this impact.

Meeting adjourned about 12 noon.