IEEE 802.11
Wireless Access Method and Physical Layer Specifications

Title: **Minutes of DS-PHY**
Salt Lake City, Utah

Minutes of DS-PHY (08 May 1995)
Salt Lake City, Utah

Attendees:
Jan Boer (AT&T)
Don Sloan (Aironet)
Dan Morelli (Telxon)
Mike Trompower (Aironet)
Jonathon Cheah (Solectek)

Minutes of March meeting in West Palm Beach approved by consensus.

Jan Boer asks to be alleviated of editorial tasks. - Mike Trompower (Aironet) will assume the responsibilities. (will use documents 95/72 and 95/78 as foundation)

Goal of this meeting is to resolve all remaining letter ballot technical comments.

Review of all open issues (as follows):

resolve T2 (DS-PHY dependent MIB variables should be defined)
resolve T3 by updating drawings
resolve T13 by incorporating document 95/50

discussion of T16 - consensus is that the scrambler is needed and will prevent the DC bias and in addition wording must be added to reflect that an initialization of all ones is not allowed
resolve T16 as rejected comment and update initialization value

T19 - still open and must be done (will come back to this later in the week)
T21 - still open and must be done (will come back to this later in the week)
T22 - still open and must be done (will come back to this later in the week)
T23 - closed last meeting editorial work still remains to be completed
T26/27/37 - still open and must be done (will come back to this later in the week)
wait for comments on back-off discussions in MAC group
T41 - FER comments were added to 95/78 - all should review for completeness and correctness
T43 - was actually finished last meeting - deferred comment ignored
T44/T1 - CCA issues will be discussed together

editorial changes to DS-PHY section 11 (doc 95/78) approved at this meeting:
1) update the length field to be 4 to 2^16 since a zero byte data payload will have a CRC of 4 bytes.
2) correct frequency table for Japan frequency to be 2484 Mhz
3) update CHNL_ID field to be 1 to 11. (table 11-4)
4) will update the scrambler section to reflect scrambler initialization as any state except all ones

5) will update the scrambler section and diagram to depict Z^-1 instead of X^-1
6) must add back into doc 95/78 the section numbers (will transfer from D1)
7) edit Adjacent Channel sections to replace BER with FER

CCA discussion

Should system noise figure, antenna gain, cable loss, etc. be added to the energy detect threshold calculation? If a high gain antenna is used with a fixed threshold, the result is much greater chance of hold-off versus a system with a lower gain antenna.

There is a potential conflict of descriptions - If the TXPWRLVL is used to set the energy detect threshold, then why is there specified 7 bits of threshold value specified as a primitive. Should the 2 bit power level bits be used to chose a threshold from a four entry table? Should the control of forcing the CCA active be the responisibility of PHY or should it be in the MAC so that an adaptive threshold algorithm can be employed? If threshold is based only on tx pwr level, then remove the variable threshold and 'hard-code' four values in the PHY.

how is correlation defined? over how many symbol periods is the measurement window?

the following works to resolving T44/T1 comments.

update CCA section (11.4.8.4) to delete diagram to eliminate confusion and rely on 5 descriptive wordings. add the following text to precede the 5 cases: The CCA shall be true if there is no energy detect or carrier sense. If ED is active for a period of 22 msec without carrier sense being active, then CCA will go true until a positve change in energy detect or carrier sense or a transmit to receive condition as described below in e (changed to c). The CCA parameters are subject to the following criteria: a) d)(with change of T43) e)

will continue discussion and finalize at tomorrow meeting

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Al Petrich (Harris)
John Fakatselis (Harris)

Motion to keep scrambler and change implementation to reflect initialization procedure as described above (T16 resolution)
(4-0-0) motion carried / Text of doc 95/72 updated to reflect action taken on T16

continuation of CCA discussion to resolve T44/T1:
Motion to adopt changes as described above.
(4-0-0) motion carries / Text of doc 95/72 updated to reflect action taken on T44 and T1

Discussion of T26/T27/T37 comments referring to turnaround times:
since no proposals were brought to the group in support or against the changing of the current numbers of 5 us turnaround time these comments are rejected until such time as technical proposals are brought forward and obtain sufficient backing. The current numbers are based on current designs in production and are achievable.

One item noted of concern is that the additional power consumption incurred by leaving the power amp always powered may be alleviated by lengthening the turnaround time.

motion made to reject the T26/T27/T37 comments and keep the current values of 5 usec turnaround time until such time as technical proposal is brought forward with sufficient backing to change this value.
(4-0-0)

discussion on DS specific MIB variables to work towards resolving T2/T21/T22 and T19/T23

adjourn for lunch then full working group session

Minutes of DS-PHY (10 May 1995)
Salt Lake City, Utah

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continuation of MIB variable discussion

The following table entries which are DSSS PHY specific MIB variables will be included in section 11.3.4 and/or chapter 9. This table is specific for MAC/PHY interface. Other variables should be defined later which will be entered into a higher level MIB for system configuration and control.

Joined with the FH-PHY group to have a joint discussion on MIB variables and what they are to accomplish. Final work accomplished is recorded below for the DS-PHY. In a separate submission will be the text for chapter 9 which contains the PHY independent variables.

Work towards a completed MIB table was accomplished with the following result approved (4-0-0)

Managed Object	Default Value / Range	Operational Semantics	Operational Behaviour / Notes
PHY_Type	DSSS-2.4 (02)	Static	Identical for all DSSS PHYs operating in 2.4 GHz.
Num_Supported_Regulatory_ Domains	implementation dependent	Static	Reports the number of approvals received
FCC	10 / (10-1F)	Static	as appropriate
DOC	20 / (20-2F)	Static	as appropriate
ETSI	30 / (30-3F)	Static	as appropriate
MKK	40 / (40-4F)	Static	as appropriate
Slot_Time	20 usec	Static	
CCA_Assessment_Time	15 usec	Static	Energy detect time
RxTx_Turnaround	5 usec	Static	
TxRx_Turnaround	10 usec	Static	
SIFS_Time	10 usec	Static	
Num_RX_Antenna	implementation dependent	Static	reports number of physical antenna connectors and/or
Num_TX_Antenna	implementation dependent	Static	fixed integrated RX and TX antennaes
Antennna_Diversity_Control	0x00 = on, 0xYY = dedicated antenna #YY	Dynamic	Diversity on will use all antennaes, Diversity is off otherwise and will only use the selected antenna YY

Num_TX_PowerLevels	implementation dependent	Static	reports number of supported power levels.
PowerLevel_1	value in dBm (0-30)	Static	MAC must determine the
PowerLevel_2	...	Static	allowed levels for a part-
...	...	Static	icular geographic area
PowerLevel_xXx	value in dBm (0-30)	Static	
Max_TXPower_Level	value in dBm (0-30)	Dynamic	
Sleep_TurnOn_Time	value in usec - implementation dependent	Static	Cold-Start power on time
Doze_TurnOn_Time	value in usec - implementation dependent	Static	Warm-Start power on time