IEEE 802.11
Wireless Access Method and Physical Specification

Title: **FH PHY Proposed Revisions to Section 10.7 and 10.8 of D1.1**

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Author:

Dean Kawaguchi
Symbol Technologies, Inc.
2145 Hamilton Ave.
San Jose, CA. 95125
Voice: (408)369-2629
FAX: (408)446-4630
email: DeanK@psd.symbol.com

Ed Geiger
Apple Computer, Inc.
One Infinite Loop M/S 301-4J
Cupertino, CA. 95014
Voice: (408)974-4907
FAX: (408)974-9793
email: edg@apple.com

This submission documents the FH PHY subgroup's proposed changes to Section 10.7 and 10.8 of the D1.1 draft. The changes include both editorial changes as implemented by the listed authors above and technical changes as voted and approved in the FH PHY subgroup sections at the May 1995 plenery. Some portions have not been addressed, either editorially or technically, and some of the technical changes voted in the May meeting have not been implemented due to time constraints. All effort has been made to implement the intent of the technical change decisions made in the sub-group meeting in the cases that lacked specific change text at the time of the meeting. As stated before, the intent of this interim draft is not to get it perfect, but to get it closer to the final version. If there a few points which have not been addressed to your satisfaction, you are invited to bring your comments to the next meeting. However, if in your opinion, the section is an improvement over the previous version, the authors recommend that you vote affirmatively so that progress may be made in the next meeting.

10.

10.7. FHSS Physical Medium Dependent Sublayer 2.0M Bit

10.7.1. Introduction

~~The following section defines the requirements for implementing the FHSS PHY 2.0M bit PMD. Since many of the requirements of this PMD are the same as the 1.0M bit PMD, this section only identifies the specifications where the two PMDs differ. When the specifications are the same, these specifications will be contained in section 10.6.~~

The following section details the RF specification differences of the optional 2.0 Mb/s operation from the baseline 1.0Mb/s PMD as contained in section 10.6. When implementing the 2.0 Mb/s PLCP_PDU option, the preamble and PHY Header shall be transmitted at 1 Mb/s. Stations implementing the 2.0 Mb/s option shall also be capable of transmitting and receiving PLCP_PDUs at 1 Mb/s.

~~10.7.2. Regulatory Requirements~~

~~See section 10.6.2~~

~~10.7.3. Operating Frequency Range~~

~~See Section 10.6.3~~

~~10.7.4. Number of Operating Channels~~

~~See Section 10.6.4~~

~~10.7.5. Operating Channel Center Frequency~~

~~See Section 10.6.5~~

~~10.7.6. Occupied Channel Bandwidth~~

~~See Section 10.6.6~~

~~10.7.7. Minimum Hop Rate~~

~~See Section 10.6.7~~

~~10.7.8. Hop Sequences~~

~~See Section 10.6.8~~

~~10.7.9. Unwanted Emissions~~

~~See Section 10.6.9~~

10.7.10. 4 Level GFSK Modulation

For a FHSS 2MB/sec PMD, the modulation scheme shall be 4 level Gaussian Frequency Shift Keying (4GFSK), with a nominal symbol-period bandwidth product (BT) = 0.5. The four level deviation factor, defined as the frequency separation of adjacent symbols divided by symbol rate, h4, shall be related to the deviation factor of the 2GFSK modulation, h2, by the following equation:

h4/h2 = 0.45+/-0.01

An incoming bit stream at 2 Mb/sec will be converted to 2 bit words or symbols, with a rate of Fclk=1M symbol/sec. The first received bit will be encoded as the left most bit of the symbol in the table below. The bits will be encoded into symbols as shown in Table 10-16 below:

1 Mbit/sec, 2-GFSK

Symbol	Carrier Deviation
1	1/2 * h2*Fclk
0	-1/2 * h2*Fclk

2 Mbit/sec, 4-GFSK

Symbol	Carrier Deviation
10	3/2 * h4*Fclk
11	1/2 * h4*Fclk
01	-1/2 * h4*Fclk
00	-3/2 * h4*Fclk

Table 10-16. Symbol Encoding into Carrier Deviation

*Note: The frequency deviations shown in the Table 10-16 are achieved by symbols being surrounded by identical symbols; in actual data stream the instantaneous deviation will vary due to Gaussian pulse shaping.

The modulation error shall be less than +/-15kHz at the mid symbol time for 4-GFSK, from the frequency deviations specified above, for a symbol surrounded by identical symbols, and less than +/-25 KHz for any symbol. The deviation is relative to the nominal center frequency of the RF carrier. For definition purposes, the nominal center frequency is the mid frequency between symbols 11 and 01. The nominal center frequency shall not vary greater than +/-10kHz/msec, from the start to end of the 4GFSK data word. H4, measured as a difference between the outmost frequencies, divided by 3, divided by 1 MHz, should have a minimum value of 0.140. The ratio h4/h2 will be 0.45+/-0.01. The peak to peak deviation h2 of the 2-GFSK is measured in the middle of 0000 and 1111 patterns encountered in the unique word in the PHY header. Symbols and terms used within this section are illustrated in the figure 10-16 below:

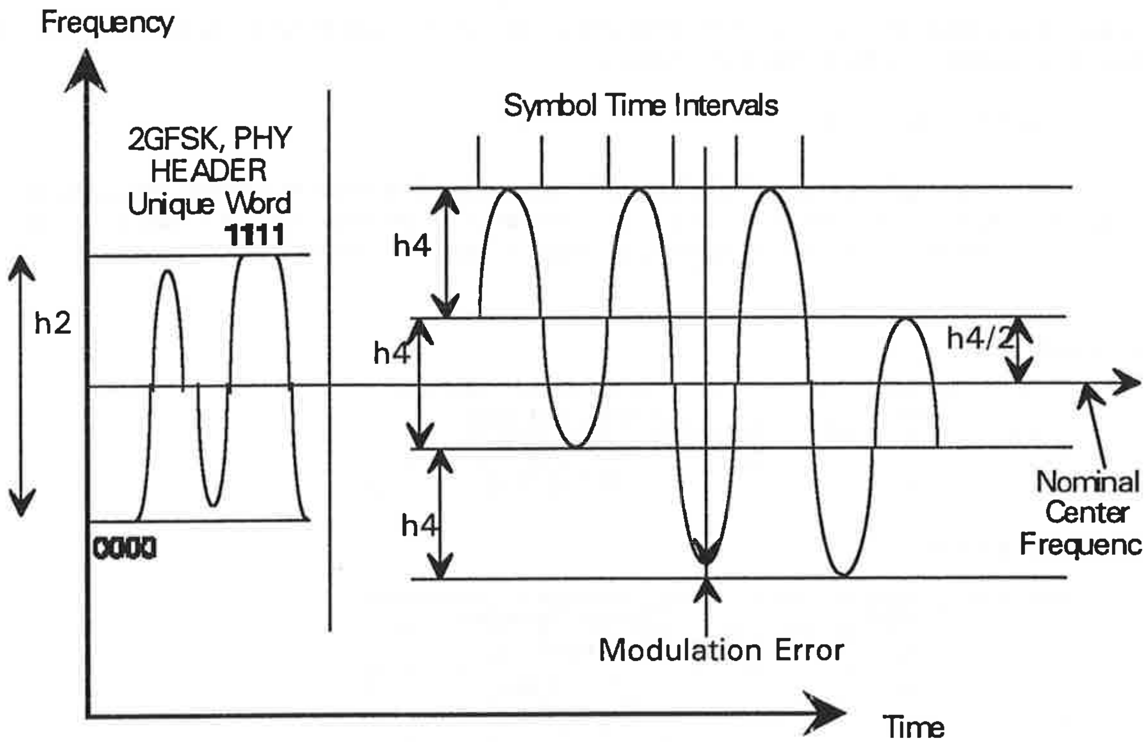

Figure 10-16. 4 Level GFSK Transmit Modulation

10.7.10.1. Frame Structure for HS FHSS PHY

The HS FHSS PHY frame consists of PLCP preamble, PLCP header and PLCP_PDU. The PLCP preamble and PLCP header format are identical to 1 Mbit PHY, as described in 10.3.2. The PLCP_PDU is transmitted in 2GFSK, 4GFSK or higher format, according to the rate chosen. The **rate** is indicated in a 2 bit field in a PLCP header, having value of 1 or 2 bits/symbol (or Mbit/sec).

The PLCP_PDU is transmitted as 4 level symbols, with the amount determined by **number_of_symbols = (number_of_MPDU_bytes*8)/rate** .

The input bits are scrambled according to method in 10.3.2.3.

The scrambled bit stream is divided into groups of **rate** (1 or 2) consecutive bits. The bits are mapped into symbols according to Table 10-16.

A Bias suppression algorithm is applied to the resulting symbol stream. The bias suppression algorithm is defined in 10.3.2.3, figs. 10-5,10-7a. A polarity control symbol is inserted prior to each block of 32 symbols (or less for the last block). The polarity control signals are 4GFSK symbols 10 or 00. The algorithm is equivalent to the case of 2GFSK, with the polarity symbol 2GFSK '1' replaced with 4GFSK symbol 10, and the 2GFSK polarity symbol '0' replaced with a 4GFSK symbol '00'.

10.7.11. Channel Data Rate

The data rate for the PLCP_PDU at the optional rate shall be 2.0 Mb/s +/- 50 ppm. The FHSS 2M bit per sec PMD will be capable of transmitting and receiving at a nominal data rate of 2.0 Mbps and 1 Mbps.

10.7.12. Channel Switching/Settling Time

See Section 10.6.12

10.7.13. Receive to Transmit Switch Time

See Section 10.6.13

10.7.14. PMD Transmit Specifications

See Section 10.6.14

10.7.14.1. Nominal Frame Transmit Power

See Section 10.6.14.1

10.7.14.2. Transmit Power Levels

See Section 10.6.14.2

10.7.14.3. Transmit Power Level Control

See Section 10.6.14.3

10.7.14.4. Transmit Spectrum Shape

See Section 10.6.14.4

10.7.14.5. Transmit Center Frequency Tolerance

See Section 10.6.14.5

10.7.14.6. Transmitter Ramp Periods

See Secion 10.6.14.6

10.7.15. PMD Receiver Specifications

See Section 10.6.15

10.7.15.1. Input Dynamic Range

When operating at 2.0 Mb/s, the frame error rate shall not exceeded 10^{-2} for input levels between -75 dBm and -10 dBm for a 112 octet MPDU. The PMD implementation shall be capable of recovering a conformant PMD signal from the medium, as described in related sections, whose level is between -75 dBm (defined as minimum sensitivity) and -10 dBm (defined as maximum allowable input level).

10.7.15.2. Receive Center Frequency Acceptance Range

~~See Sections 10.6.15.2~~

~~10.7.15.3. Clear Channel Assessment Power Threshhold~~

~~See Sections 10.6.15.3~~

10.7.15.4. Minimum Receiver Sensitivity

Sensitivity is defined as the minimum signal level required to produce a PER of 10-2 with a 122 octet PLCP_PDU. When operating a 2.0Mb/s, the sensitivity shall ~~ThePMD shall have the minimum signal level~~ be less than or equal to -75 dBm across the operating frequency range specified in 10.6.2.

10.7.15.5. Intermodulation

Intermodulation protection (IMp) is defined as the ratio to -77 dBm of the minimum amplitude of one of the two equal level interfering signals at 4 and 8 MHz removed from center frequency, both on the same side of center frequency, that cause the PER of the receiver to be increased to 10^{-2}, when the desired signal is -72 dBm (3dB above the specified sensitivity specified in section 10.7.15.4). Each interfering signal is modulated with the FH 1Mb/sec PMD modulation uncorrolated in time to each other or the desired signal. The FHSS optional 2Mb/sec rate ~~PMD shall have the~~ IMp shall~~for the interfering signal at 4 and 8 MHz~~ be greater than or equal to 25~~30~~ dB.

10.7.15.6. Desensitization

Desensitization (Dp) is defined as the ratio to measured sensitivity of the minimum amplitude of an interfering signal that causes the PER of the receiver to be increased to 10^{-2} when the desired signal is -72 dB (3 dB above sensitivity specified in section 10.7.15.4~~26~~). The interfering signal shall be modulated with the FHSS PMD modulation uncorrolated in time to the desired signal. The minimum Dp shall be as~~greater than or equal to the values~~ given in Table 10-17 below:

Interferer Frequency	DP Minimum
M=N+/-2	20~~24~~dB
M=N+/-3 or more	30~~35~~dB

Table 10-17: 2M Bit Desensitization

*M is the interferer frequency and N is the desired channel frequency

~~10.7.16. Operating Temperature Range~~

~~See Section 10.6.16~~

10.8.FHSS PHY Management Information Base

10.8.1.Introduction

The following is the Management Information Base for the Frequency Hopping Spread Spectrum PHY.

10.8.2. FH PHY Managed Objects

The following section defines the managed objects for the FHSS MIB. Table 10-6 lists these managed objects and the default values. Preceeding the table is a description of each managed object.

Managed Object	Default Value	Operational Semantics	Operational Behavior
PHY_Type	FHSS = 01h	Static	Identical for all PHYs
Reg_Domains_Suprt	FCC = 10h DOC = 20h ETSI = 30h MKK = 40h	Static	Implementation Dep.
Slot_Time	50 usec	Static	Identical for all PHYs
CCA_Asmnt_Time	29 usec	Static	Identical for all PHYs
RxTx_Turnaround_Time	20 usec	Static	Identical for all PHYs
Tx_PLCP_Delay	1 usec	Static	Identical for all PHYs
RxTx_Switch_Time	10 usec.	Static	Identical for all PHYs
TxRamp_On_Time	8 usec.	Static	Identical for all PHYs
Tx_RF_Delay	1000 nsec.	Static	Identical for all PHYs
SIFS_Time	28 usec. +2/-3 usec	Static	Identical for all PHYs
Rx_RF_Delay	4 usec.	Static	Identical for all PHYs
Rx_PLCP_Delay	2 usec.	Static	Identical for all PHYs
MAC_Prc_Delay	2 usec.	Static	Identical for all PHYs
TxRamp_Off_Time	8 usec.	Static	Identical for all PHYs
MPDU_Max_Lngth_1M	400 octets	Static	Identical for all PHYs
MPDU_Max_Lngth_2M	800 octets	Static	Identical for all PHYs
Suprt_Data_Rates	1M = 01 Mandatory 2M = 02 Optional	Static	Identical for all PHYs
Suprt_Tx_Antennas	Ant 1 = 01h Ant 2 = 02h Ant 3 = 03h Ant n = n	Static	Implementation Dep.
Current_Tx_Antenna	Ant 1 = default	Dynamic LME	Implementation Dep.
Suprt_Rx_Antennas	Ant 1 = 01h Ant 2 = 02h Ant 3 = 03h Ant n = n	Static	Implementation Dep.
Diversity_Suprt	Available = 01h Not Avail. = 02h Control Avail = 03h	Static	Implementation Dep.

Diversity_Slct_Rx	Ant 1 = 01h Ant 2 = 02h Ant 3 = 03h Ant 4 = 04h Ant 5 = 05h Ant 6 = 06h Ant 7 = 07h Ant 8 = 08h	Dynamic LME	Implementation Dep.
Nbr_Suprt_Pwr_Lvls	Lvl1 = 01h Lvl2 = 02h Lvl3 = 03h Lvl4 = 04h Lvl5 = 05h Lvl6 = 06h Lvl7 = 07h Lvl8 = 08h	Static	Implementation Dep.
Tx_Pwr_Lvl_1	Factory def. Default	Static	Implementation Dep.
Tx_Pwr_Lvl_2	Factory def.	Static	Implementation Dep.
Tx_Pwr_Lvl_3	Factory def.	Static	Implementation Dep.
Tx_Pwr_Lvl_4	Factory def.	Static	Implementation Dep.
Tx_Pwr_Lvl_5	Factory def.	Static	Implementation Dep.
Tx_Pwr_Lvl_6	Factory def.	Static	Implementation Dep.
Tx_Pwr_Lvl_7	Factory def.	Static	Implementation Dep.
Tx_Pwr_Lvl_8	Factory def.	Static	Implementation Dep.
Synthesizer_Locked	00h	Dynamic PLME	Identical for all PHYs
Hop_Time	224 usec	Static	Identical for all PHYs
Current_Tx_PwrLvl	Tx_Pwr_Lvl_1	Dynamic LME	Implementation Dep.
Current_Channel_Nbr	00h	Dynamic PLME	Identical for all PHYs
Current_Reg_Domain	00h	Dynamic LME	Implementation Dep.
Max_Dwell_Time	FCC = 400 msec	Static	Reg_Domain Dep.
Current_Dwell_Time	20 msec	Dynamic LME	Identical for all PHYs
Current_Set	00h	Dynamic PLME	Identical for all PHYs
Current_Pattern	00h	Dynamic PLME	Identical for all PHYs
Current_Index	00h	Dynamic PLME	Identical for all PHYs

Table 10-18: FHSS PHY Managed Objects

Notes: The column titled Operational Semantics contains two types: static and dynamic. Static MIB variables are fixed and can not be modified for a given PHY implementation. MIB Variables defined as dynamic can be modified by some management entity. Whenever a variable is defined as dynamic, the column also shows which entity has control over the variable. LME refers to the MAC Layer Management Entity while PHY refers to the PHY Layer Management Entity (PLME).

10.8.2.1. FH PHY Managed Objects Definitions

10.8.2.1.1. PHY_Type

The PHY_Type is Frequency Hopping Spread Spectrum. The LME uses this oject to determine what PLCP and PMD is providing services to the MAC. It also is used by the MAC to determine what MAC Layer Management State machines must be invoke to support the PHY. The value of this object is defined as the integer 01 to indicate the FHSS PHY.

10.8.2.1.2. Reg_Domains_Suprt.

Operational requirements for FHSS PHY are define by agencies representing certain geographical regulatory domains. These regulatory agencies may define limits on various parameters that differ from region to region. This parameters may include Tx_Pwr_Lvls, and Max_Dwell_Time, as well as the total number of frequencies in the hopping pattern. The following values have been defined to indicated the some of the regulatory agencies:

Code Point	Regulatory Agency
10h	FCC
20h	DOC
30h	ETSI
40h	MKK
00h	Null Terminator

Table 10-19: Regulatory Domain Codes

Since a PLCP and PMD might be designed to support operation in more than one regulatory domain, this managed object can actually represent a list of agencies. This list can be one or more of the above agencies and must be terminated using the null terminator. Upon activation of the PLCP and PMD, the information in this list must be used to the value of the Current_Reg_Domain managed object.

10.8.2.1.3. Slot_Time.

The Slot_Time is a PHY dependent variable used by the MAC sublayer to determine the PIFS and DIFS periods. It is defined using the following equation:

CCA_Asmnt_Time + RxTx_Turnaround_Time + Air_Propagation_Time

For the FHSS PHY, the CCA_Asmnt_Time is 29 usec. and the RxTx_Turnaround_Time is 20 usec. The Air_Propagation_Time is fixed at 1 usec for all PHY's. The value of this managed object is 50 usec.

10.8.2.1.4. CCA_Asmnt_Time.

The CCA_Asmnt_Time for the FHSS PHY is defined as the time the receiver must use to evaluate the media at the antenna to determine the state of the channel. At the end of this period, a receiving station must indicate the state of the channel with the accuracy specified in section 10.7.x. This time period for the FHSS PHY is 29 usec. This period includes the Rx_RF_Delay and the Rx_PLCP_Delay.

10.8.2.1.5. RxTx_Turnaround Time.

The RxTx_Turnaround_Time for the FHSS PHY is defined as the time a station uses to place a valid symbol on the media from the start of the slot. The start of the slot is that point in time when the MAC sublayer must start transmitting if it has something to send. The RxTx_Turnaround_Time is determined using the following equation.

Tx_PLCP_Delay + RxTx_Switch_Time + TxRamp_On_Time + Tx_RF_Delay

For the FHSS PHY, the Tx_PLCP_Delay is 1 usec., the RxTx_Switch_Time is 10 usec., the TxRamp_On_Time is 8 usec., and the Tx_RF_Delay is 1 usec, for a total of 20 usec. This is the maximum time for getting valid data on the media. Stations can use less time but not less than 20 usec.

10.8.2.1.6. Tx_PLCP_Delay

The Tx_PLCP_Delay for the FHSS PHY is defined as the nominal delay the PLCP introduces to getting data onto the air in the transmit direction. This value for the FHSS PHY is set at 1 usec. Implementations may chose to increase or decrease this delay as long as the requirements of the RxTx_Turnaround_Time are met.

10.8.2.1.7. RxTx_Switch_Time.

The RxTx_Switch_Time for the FHSS PHY is defined as the nominal delay the PMD requires to change from receive to transmit. This value for the FHSS PHY is set at 10 usec. Implementations may chose to increase or decrease this delay as long as the requirements of the RxTx_Turnaround_Time are met.

10.8.2.1.8. TxRamp_On_Time.

The TxRamp_On_Time for the FHSS PHY is defined as the nominal delay the PMD requires to turn on the transmit power amplifier. This value for the FHSS PHY is set at 8 usec. Implementations may chose to increase or decrease this delay as long as the requirements of the RxTx_Turnaround_Time are met.

10.8.2.1.9. Tx_RF_Delay.

The Tx_RF_Delay for the FHSS PHY is defined as the nominal delay the PMD introduces in the data path between the PLCP and the media. This value for the FHSS PHY is set at 1 usec. Implementations may chose to increase or decrease this delay as long as the requirements of the RxTx_Turnaround_Time are met.

10.8.2.1.10. SIFS_Time.

The SIFS_Time for the FHSS PHY is defined as the time the MAC and PHY sublayers will require to receive the last symbol of a frame at the air interface, process the frame and respond with the first symbol of a preamble on the air interface at the earliest possible time. The SIFS_Time is determined using the following equation.

Rx_RF_Delay + Rx_PLCP_Delay + MAC_Prc_Delay + RxTx_Turnaround_Time

For the FHSS PHY, the Rx_RF_Delay is 4 usec., the Rx_PLCP_Delay is 2 usec., the MAC_Prc_Delay is 2 usec., and the RxTx_Turnaround_Time is 20 usec, for a total of 28 usec. This is the maximum time for getting valid data on the media. In order to account for asynchronous timing, this value has a tolerance of +2/-3 usec.

10.8.2.1.11. RX_RF_Delay.

The Rx_RF_Delay for the FHSS PHY is defined as the nominal delay the PMD introduces in the data path between the receive antenna and the PLCP. This value for the FHSS PHY is set at 4 usec. Implementations may chose to increase or decrease this delay as long as the requirements of the SIFS_Time and CCA_Asmnt_Time are met.

10.8.2.1.12. Rx_PLCP_Delay.

The Rx_PLCP_Delay for the FHSS PHY is defined as the nominal delay the PLCP introduces in the data path between the PMD and the MAC sublayer. This value for the FHSS PHY is set at 2 usec. Implementations may chose to increase or decrease this delay as long as the requirements of the SIFS_Time and CCA_Asmnt_Time are met.

10.8.2.1.13. MAC_Prc_Delay.

The MAC_Prc_Delay for the FHSS PHY is defined as the nominal delay the MAC requires for processing the frame after receiving the last data bit from the receiver PLCP to sending a start transmission request to transmit PLCP. This value for the FHSS PHY is set at 2 usec. Implementations may chose to increase or decrease this delay as long as the requirements of the SIFS_Time are met.

10.8.2.1.14. TxRamp_Off_Time.

The TxRamp_Off_Time for the FHSS PHY is defined as the nominal delay the PMD requires to turn off the transmit power amplifier. This value for the FHSS PHY is set at 8 usec.

10.8.2.1.15. MPDU_Max_Lngth_1M.

The MPDU_Max_Lngth_1M managed object for the FHSS PHY is defined as the maximum number of octets that can be in the MPDU of a packet when sending data using the 1M PMD specifications. This value for the FHSS PHY is set at 400 octets.

10.8.2.1.16. MPDU_Max_Lngth_2M.

The MPDU_Max_Lngth_2M managed object for the FHSS PHY is defined as the maximum number of octets that can be in the MPDU of a packet when sending data using the 2M PMD specifications. This value for the FHSS PHY is set at 800 octets.

10.8.2.1.17. Suprt_Data_Rates.

The Suprt_Data_Rates managed object for the FHSS PHY is defined as a null terminated list of supported data rates for this implementation. The table below shows the possible values appearing in the list

Code Point	Data Rate
01h	1M bits per second
02h	2M bits per second
00h	Null Terminator

Table 10-20: Supported Data Rate Codes

10.8.2.1.18. Suprt_Tx_Antennas.

The Suprt_Tx_Antennas managed object for the FHSS PHY is defined as a null terminated list of antennas which this implementation can use to transmit data. The table below shows the possible values appearing in the list.

Code Point	Antenna Number
01h	Tx Antenna 1
02h	Tx Antenna 2
03h	Tx Antenna 3
N	Tx Antenna N
00h	Null Terminator

Table 10-21: Number of Transmit Antennas

10.8.2.1.19. Current_Tx_Antenna.

The Current_Tx_Antenna managed object for the FHSS PHY is used to describe the current antenna the implementation is using for transmission. This value should represent one of the antennas appearing in the Suprt_Tx_Antennas list.

10.8.2.1.20. Suprt_Rx_Antenna.

The Suprt_Rx_Antennas managed object for the FHSS PHY is defined as a null terminated list of antennas which this implementation can use to receive data. In the FHSS PHY primitives, one of these values is passed as part of the PHY_DATA.indicate to the MAC sublayer for every received packet. The table below shows the possible values appearing in the list.

Code Point	Antenna Number
01h	Rx Antenna 1
02h	Rx Antenna 2
03h	Rx Antenna 3
N	Rx Antenna N
00h	Null Terminator

Table 10-22: Number of Receive Antennas

10.8.2.1.21. Diversity_Suprt.

The Diversity_Suprt managed object for the FHSS PHY is used to describe the implementation's diversity support. The table below shows the possible values appearing in the list.

Code Point	Diversity Support
01h	Diversity Available
02h	No Diversity
03h	Control Available

Table 10-23: Diversity Support Codes

The value 01h indicates that this implementation uses two or more antennas for diversity. The value 02h defines the implementation has no diversity support. The value 03h indicates that antennas used during diversity are programmable. (See Diversity_Slct_Rx)

10.8.2.1.22. Diversity_Slct_Rx.

The Diversity_Slct_Rx managed object for the FHSS PHY is a null terminate list describing the receive antenna or antennas currently in use during diversity and packet reception. The table below shows the possible values appearing in the list.

Code Point	Antenna Number
01h	Rx Antenna 1
02h	Rx Antenna 2
03h	Rx Antenna 3
N	Rx Antenna N
00h	Null Terminator

Table 10-24: Diversity Select Antenna Codes

The null terminate list can consist of one or more of the receive antennas listed in the Suprt_Rx_Antennas managed object. This object can be changed dynamically by the LME.

10.8.2.1.23. Nbr_Suprt_Pwr_Lvls.

The Nbr_Suprt_Pwr_Lvls managed object for the FHSS PHY describes the number of power levels this implementation supports. This managed object can be a integer of value 1 through 8 inclusive.

10.8.2.1.24. Tx_Pwr_Lvl_1-8.

Some implementations may provide up to eight different operating power output levels. The Tx_Pwr_Lvls managed objects for the FHSS PHY is a list of eight managed objects which define the actual power output levels in xxxx which this implementation can support. The following table describes the list.

Managed Object	Power Level
Tx_Pwr_Lvl_1	Default Setting
Tx_Pwr_Lvl_2	Level 2
Tx_Pwr_Lvl_3	Level 3
Tx_Pwr_Lvl_4	Level 4
Tx_Pwr_Lvl_5	Level 5
Tx_Pwr_Lvl_6	Level 6
Tx_Pwr_Lvl_7	Level 7
Tx_Pwr_Lvl_8	Level 8

Table 10-25: Transmit Power Levels

10.8.2.1.25. Synthesizer_Locked.

The Synthesizer_Locked managed object for the FHSS PHY is a status indicator which describes whether the synthesizer is locked or unlocked. If this value is 00h, the synthesizer is unlocked, if the value is FFh, the synthesizer is locked.

10.8.2.1.26. Hop_Time.

The Hop_Time managed object for the FHSS PHY describes the worst case time in usec. the synthesizer requires to change to a new frequency. For the FHSS PHY, this time period is 224 usec.

10.8.2.1.27. Current_Tx_PwrLvl.

The Current_Tx_PwrLvl managed object for the FHSS PHY is defined as the current transmit output power level. This level shall be one of the levels implemented in the list of managed objects called Tx_Pwr_Lvl_n (where n is 1-8). This MIB variable is also used to define the sensitivity of the CCA mechanism when the output power exceeds 100mW. See section 10.x for more detail. This MIB variable is managed by the LME.

10.8.2.1.28. Current_Channel_Nbr.

The Current_Channel_Nbr managed object for the FHSS PHY is defined as the current channel number of the frequency programmed in the PMD synthesizer. This value corresponds to the table shown in section 10.6 concerning the Operating Channel Center Frequency. This MIB variable is managed by the PLME and is updated as the results of a PLME_SETCHNL.request.

10.8.2.1.29. Current_Reg_Domain.

The Current_Reg_Domain managed object for the FHSS PHY is defined as the current regulatory domain the PMD is operating under. This value must be one of the values list in the Reg_Domains_Suprt list. This MIB variable is managed by the LME.

10.8.2.1.30. Max_Dwell_Time.

The Max_Dwell_Time managed object for the FHSS PHY is defined as the maximum time the PMD can dwell on a channel and meet the requirements of the current regulatory domain the PMD is operating under. For the FCC regulatory domain, this number is 400 msec.

10.8.2.1.31. Current_Dwell_Time.

The Current_Dwell_Time managed object for the FHSS PHY is defined as the current dwell time the LME has determined for the WLAN. This value must be less than or equal to the Max_Dwell_Time value. This MIB variable is managed by the LME.

10.8.2.1.32. Current_Set.

The FHSS PHY contains 3 set of hopping patterns. Each set contains 22 patterns and each pattern has some number of channels depending on the Current_Reg_Domain. These channels are addressed through an Index. The Current_Set managed object for the FHSS PHY defines what set the station is using to determine the hopping pattern. Its value can be 0,1,2,3. The default is 0 which is used to when a node is probing for a WLAN. This MIB variable is managed by the PLME and is updated as the results of a PLME_SETCHNL.request.

10.8.2.1.33. Current_Pattern.

The FHSS PHY contains 3 set of hopping patterns. Each set contains 22 patterns and each pattern has some number of channels depending on the Current_Reg_Domain. These channels are addressed through an Index. The Current_Pattern managed object for the FHSS PHY defines what pattern the station is using to determine the hopping sequence. Its value has various ranges depending on the Current_Reg_Domain. The default is 0 which is used to when a node is probing for a WLAN. This MIB variable is managed by the PLME and is updated as the results of a PLME_SETCHNL.request.

10.8.2.1.34. Current_Index.

The FHSS PHY contains 3 set of hopping patterns. Each set contains 22 patterns and each pattern has 79 channels. These channels are addressed through an Index. The Current_Index managed object for the FHSS PHY defines what the current index is that the station is using to determine the next hop channel number. Its value has various ranges depending on the Current_Reg_Domain. When Current_Set and Current_Pattern are both set to 0, the value of the Current_Index is equal to the value of the Current_Channel_Nbr. This MIB variable is managed by the PLME and is updated as the results of a PLME_SETCHNL.request.