Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Comment/Rationale	Corrected Text	Disposition/Rebuttal

Resolutions on Ballot on Draft Standard D4.0

Comments on clauses 12-16

Seq #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Comment/Rationale	Corrected Text	Disposition/Rebuttal
1	12.3.4.3	jz	E		There are a number of places in the PHY parts of the draft that use hexadecimal and binary-string notation. We need to either change these to use decimal the way clause 7 did, or establish a set of conventions to use throughout the draft for specifying these numbers so that '11' for example is interpreted as one more than the number of fingers most people are born with, rather than sometimes three and other times the age at which one can legally be tried as an adult for most crimes in certain states.	Be consistent and do not introduce gratuitous different kinds of notation.	Comment rejected Jan/Nathan 10,0,0 Mixed number formats used throughout the PHY sections as most appropriate; the "h" following the hex number is unambiguous.
2	12.3.5.12.3	jz	t		PHRXEND.indicate primitives are not always generated at the end of the incoming MPDU. If it is at an unsupported data rate, for example, the primitive is supposed to be sent immediately after processing the PLCP header's CRC. This section is not consistent with other parts of the draft that have to do with multirate support.	Harmonize with the rest of the Multirate support text.	Comment accepted with new text: This primitive shall be generated by the PHY sublayer for the local MAC entity to indicate that the receive state machine has completed a reception with or without errors. In 12.3.5.12.2, add an additional value for RXERROR: UnsupportedRate. This value shall be used to indicate that during the reception of the incoming PLCP_PDU, an unsupported data rate was encountered. Mike T/Al P 11,0,1
3	12.3.5.7.2	jjk	e	n	mistake in primitive description	PHYTXEND.confirm~~request~~	Comment accepted. Change made in 3 instances. Mike/Jan 11,0,1

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Comment/Rationale	Corrected Text	Disposition/Rebuttal
4	13.1.1.2	jz	t		The PHY mandatory rate set should be in the MIB. The MAC needs to know what rates are required for all stations, since it restricts control frames to that set of rates (see 9.6).	Add to MIB	Comment rejected. Already implied in the PHY_type and not necessary to have explicit in the MIB table Nathan/Naftali 11,0,2
5	13.1.4 D Annex D	vh	e	n	Missing specifications	aSleepTurnonTime and the 4 aCCAWatchDog attributes are not defined in 13.1.4. Please resolve.	Comment accepted. Parameters were deleted in main section previously. Resolve by removing from Annex D. Jan/Mike 13,0,0 Reconsider Mike/Jan Unanimous. Add the 4 aCCAWatchDog attributes (used by IR) in section 13. Delete aSleepTurnonTime in Annex D. Jan/Mike 13,0,0
6	13.1.4.21	vh	E	no	inconsistent units between PHY and MAC MIB atributes	change PHY attribute to 100 kbit/s in stead of 1 Mbit/s increments.	Comment accepted. Change text in BEHAVIOR DEFINED AS to "The bit rates supported by the PLCP and PMD encoded as a count from 00h - FFh representing rates from 0 to 25.5 Mb/s in increments of 100 Kb/s." Change PHY sections appropriately. Nathan/Naftali 12,0,1
7	13.1.4.21, D Annex D	vh	e	n	Inconsistency	In section 13.1.4.21 we defined aSuprtDataRates, whereas in Annex D we talk about aSuprtDataRatesTxValue and aSuprtDataRatesRxValue. Please bring in line. Also, the units may be better defined in 100 kbit/s rather than Mbit/s to be consistent with the DS PLCP header.	Comment accepted. Split aSuprtDataRates in 13.1.4.21 into two separate paragraphs for aSuprtDataRatesTx and aSuprtDataRatesRx. Take text changes from comment #6 and add "transmit" and "receive" where appropriate. Naftali/Nathan 12,0,0
8	14	vh	e	no	Inconsistent use of units	Replace unit into Mbit/s (with always a (non-breaking) space between unit and figure 14.3.2.2.2, Table 28 (5 times) 14.3.3.1.1, Figure 65 (2 times 14.3.3.1.1, 2 times just below Table 65	Comment accepted. Will make editorial change to clause 14 and suggest similar changes to other clauses. George/Naftali Unanimous

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Comment/Rationale	Corrected Text	Disposition/Rebuttal
						14.3.3.1.2 (2 times) 14.5.4.3 Table 32 (4 times) 14.6.10, 2 times in text (sec should be s) 14.6.11 second line 14.6.15.3 first, fourth and sixth line 14.6.15.4 as well as missing space 14.7.1 (7 times) 14.7.2 (3 times) (and s in Msymbol/s; make one word) 14.7.2.1 (2 times) 14.7.3 14.7.3.2 14.7.3.3 (2 times) 14.8.2.1.16 14.8.2.1.17	
9	14	es	T	Y	Higher (than 2Mb/s) data rates must be part of the standard. Having no standard at all is better than approving this draft as is The standard should utilize better modulation schemes than 4FSK. Approving the draft as is will encourage vendors and users to load the precious medium with low rate transmissions. Having no standard at all may solicit non compliant vendors to employ more sophisticated modulation schemes and possibly force a far better (de-facto) standard.		Comment rejected. Committee addressed the trade of spectrum efficiency; implementation complexity, cost, and power consumption; and performance in multipath and interference environments. We compared several modulation methods with extensive analyses and simulations and chose FSK. More complex modulations may be used for future higher rate extensions of the FH PHY, but deleting the existing base modulations and rates throws away 5 years of work by P802.11 and member companies that are preparing compliant products. Although this comment did not meet the requirements for a valid NO comment by not suggesting an alternative, we chose to

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Comment/Rationale	Corrected Text	Disposition/Rebuttal
							address it. FH PHY vote: Naftali/Nathan 8,0,0 WG vote 7/10/96 Dean/Nathan 20,0,0
10	14.3.2.3	al	t		Text currently says: "The 127-bit sequence generated repeatedly by the scrambler is..." Suggest adding language to specify under what condition this is the case. I suspect it is when "Data In" = 1, but this should be specified explicitly.	The 127-bit sequence generated repeatedly by the scrambler with Data In = 1 is...	Comment rejected. Comment is incorrect; the scrambler sequence is generated independent of the actual Data In. Naftali/Bob M 6,0,1
1112	14.3.3.2.1, 14.6.15.3 15.4.8.4 9.2.9	sab	t	n	Sure Slot Time is a PHY dependent parameter since the minimum value is directly related to CCA assessment time and RxTx turnaround time. However, the absolute timing of slot boundaries is related to MAC timing (see 9.2.9). In fact 14.3.3.2.1 is ambiguous as to the reference point for slot timing (MAC or antenna). My guess is that you mean MAC referenced slot timing - the 22us after the start of a slot referring to the RxTx Air and RF propagation delays. If this is so then say this. In fact, will the indication to the MAC at the slot boundary not be a little late since the MAC needs to make a decision aMACPrcDelay (M2 in 9.2.9) before the end of the slot boundary. Indeed, the default values in 14.8.2 do not seem to add to the slot time according to clause 9.2.9: SlotTime = RxTx (20) + AirProp (1) + CCAssmnt (29) + MACPrcDelay (2) = 52 ! I really wonder how an implementation is going to be tested for compliance to these CCA rules. Why is this not simply stated as a maximum CCA assessment time - ie signal at antenna to CCA indication - rather than something referenced to timing points not in this sub-layer? This would get rid of all this slot time referencing and asynch/synch specification. This would surely make testing compliance easier. I'm going to be interested to see the procedures for checking the probabilities for FH here too !	Cross check MAC and PHY CCA texts and diagrams for a consistent story in the sections indicated. Watch reference points. I know how this works but I'm not so sure that everything in the document knits together for the unwary ... or the conformance test specification!	FH: Comment accepted. Add as second sentence in 14.3.3.2.1: Timing for priority (PIFS, DIFS), contention backoff (slot times), and CS/CCA assessment windows are defined relative to the end the last bit of the last packet on the air. Change third sentence of first paragraph in 14.3.3.2.1: ...within a MAC contention backoff slot time of 50 us. Change aCCAAsmntTime from 29 us to 27 us in 14.8.2 (table), 14.8.2.1.4, and 14.8.2.1.5 Naftali/Bob 7,0,1 **DS:** **Comment accepted; text changed to make the definition unambiguous.** **....5 microseconds from the start**

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Comment/Rationale	Corrected Text	Disposition/Rebuttal
					I'm also not sure about 9.2.9 now since CCAdel in the PHY definition includes RxRFDelay and RxPLCPDelay (14.8.2.1.5) yet in the diagram here this is part of D2 - D2 should just be air propagation time, not D1 plus air prop time. The DS folks have a similar thing in 15.4.8.4. Again here it is ambiguous where the slot timing reference point is (with the wording here it is also ambiguous whether this means 5us from the start (correct) or end (wrong) of the slot since it simply says 'from a slot boundary'.		**of a MAC slot boundary,.... (refer to figure 47 for the definition of a MAC slot boundary) Moved by Roy/John 5,0,0**
13							
14	14.3.3.2 .1	sab	t	n	Second paragraph: If a PHY_CCARST.request is received ... This service primitive is generated by the MAC at the end of a NAV period'. Is is ? Where does it specify this within the MAC specification ?	Please provide clarification	Comment accepted with no text changes. PHY_CCARST is used within the MAC state machine. Now that the state machines are in an informative annex, the requirement needs to be explicitly stated in the main section. We recommend to the MAC group to make this change. Akira/Bob
15	14.3.3.2 .2	al	e		Typo... missing "of"	... to the end of the last bit...	Comment accepted as editorial change.
16	14.3.3.3 .2	sab	t	n	Standard says 'If any error was detected during the reception of the packet, the PLCP shall terminate the receive procedure within 8us of detecting the error' What does 'any error' refer to: there is no detection of error implied - the only mandatory measures of error are the signal goes away, or a CRC fails (MAC or PLCP) - ie no per symbol error. Specify what exactly is meant by error here (I assume it is signal disappears, or PLCP CRC error).	Not sure what intent of clause is so please clarify and propose new test.	Comment accepted. Replace second paragraph with: If any error was detected during the reception of the packet, the PLCP may send a PHY_ RXEND.indicate(RXERROR) and terminate the receive procedure before the last bit arrives. Naftali/George 4,0,2
17	14.4.3.2 &	al	e		Recommend standardizing the parameter formats... 14.4.3.2. uses "PLME_SET.request(aCurrentPwrState,		Comment accepted. Use standard format of PLME_SET.request

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Comment/Rationale	Corrected Text	Disposition/Rebuttal
	Figure 72 & others...				ON) and PLME_SET.request(aCurrent PwrState=OFF) Figure 72 uses PLME_SET.req(aCurrent_Pwr_state, ON) I don't really care which format is utilized, but it should be retained throughout the document. The use of different formats presently looks very sloppy at best and potentially confusing.		(parameter=value). Change aCurrent_Pwr_State to aCurrentPwrState. Nathan/Naftali 5,0,3
18	14.5.5.8	al	e		Typo...	This value will be used by the PLCP to performing any diversity...	Comment accepted as editorial change.
19	14.6	msu	t	¥	The current draft specifies that the 1 Mbps modulation shall be 2GFSK with BT = 0.5. The current level of -60 dBc for N >= M+/-3 is not achievable using a filtering method that addresses size and implementation restraints and takes into consideration production variations.	Change the formulas to read: Channel N = M +/-2 -20 dBm or -40 dBc, whichever is the lowest power N = M +/- 3,4,5 -30 dBm or -50 dBc, whichever is the lowest power N >= M +/- 6 -40 dBm or -60 dBc, whichever is the lowest power	Comment rejected. Many participants find this is achievable; widening would increase interference between colocated systems. This change would reduce the number of networks which can coexist within a given area. Mack already changed his NO vote to a YES, Naftali/Bob 7,0,1
20	14.6.10	vh	e	no	omissions and inconsistent use of units	Fclk is not defined in this clause. third line, change to (+fd) fourth line (fc+fd) penultimate par, second line make fc consistent	Comment accepted. Add Fclk definition. "An incoming bit stream at 1 Mbit/s will be converted to symbols at Fclk = 1 Msymbol/s as shown in Table 43." Change +f to $+f_d$ and F_c+f to F_c+f_d. Nathan/Jeff 9,0,0
21	14.6.14.4	al	E		The intention of the language is not very clear. Please clarify. What kind of failures are permissible? What is meant by a failure?		Comment accepted. Change text: Within the operational frequency band, the transmitter shall pass a spectrum mask test. For a pseudorandom data pattern, the adjacent channel power, shall

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Comment/Rationale	Corrected Text	Disposition/Rebuttal
							be ~~either less than -70 dBm or~~ a function of the offset between channel number N and the assigned transmitter channel M where M is the actual transmitted center frequency and N a channel separated from it by integer numbers of MHz. Where, M is the actual transmitted center frequency, and N a channel separated from it by <u>an</u> integer numbers of MHz. Replace table with Channel Offset |N-M| = 2 ... |N-M| >=3 .... Replace last paragraph with: <u>For any transmit center frequency M, two exceptions to the spectral mask requirements are permitted provided the exceptions are less than -50 dBc where each offset channel N exceeded counts as a separate exception.</u> Nathan/Jeff 8,0,0
22	14.6.8	dre	t		Tables 40, 41 and 42 are informative in nature, and therefore ought to be in an annex. Section 14.6.8 ought to show the formulas for computing b(i) for each of the three geographic regions. Rationale: I have marked this comment as a type 't' rather than 'E' because the formulas represent technical information that is MISSING from the standard and it ought to be provided.	[I would quote the formulas if known; since they are unknown I can't give you the formulas (that's my point). Please ask the person who generated the tables to provide the formulas.]	Comment rejected. Tables are necessary in defining the hopping patterns as the underlying sequences were generated by computer random number generators which may differ between different computers. Naftali/Nathan 8,0,0

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Comment/Rationale	Corrected Text	Disposition/Rebuttal
23	14.7	NC	T	n	All the provisions for multiple rate support are in the D4.0, including the rate signaling in the PLCP header of FH, so there is no reason not to include (given that it will be approved in the ad hoc study group and in FH group during the June 96 Plenary) the 3 Mb/sec optional PMD in the FH clause of the draft.	Include either the text of P802.11-96/80 (2 and 3 Mb/sec text) as a replacement to subclause 14.7 (2 Mb/sec text) or add a separate subclause (an adapted 96/80 to be provided by me) to describe the optional 3 Mb/sec format in clause 14.7 .	Withdraws comment on the basis of the decision in the HSFH study group to not include the 3 Mbit/s 8FSK PMD in D4.x, but to bring it to the FH PHY for consideration in future versions of the standard.
24	14.7.1	vh	e	no	inconsistent figures	change 2.0 and 1.0 on 5 places back to 2 and 1	Comment accepted as editorial.
25	14.8.2, A4.4.5	sab	t	n	SIFS time in the FHSS MIB has a tolerance of +2/-3. This is now incorrect as a motion at the last meeting was approved to make this tolerance +/10% of slot time - which is +5/-5 in the FHSS case. The PICS is incorrect too	Change to +5/-5, or leave out altogether since specified in 9.2.3.1	Comment accepted. Delete tolerance specification from 14.8.2 and 14.8.2.1.11 and change A.4.5, line 14.65, column 1: "Is the PHY MIB aSIFSTime attribute 28 us ~~+2/-3 us~~ and is the PHY capable of meeting this performance within the +/-5 us tolerance as specified in clause 9.2.3.1?" Naftali/Bob M 6,0,3
26	15	vh	e	no	Inconsistent use of units	15.1 (3 times) 15.2.3 15.2.3.3 (2 times) 15.2.5 15.2.6 (2 times) 15.3.2: Change to Mbit/s in: Table 57 (2 times) 15.3.3.6 (1 time) Table 64 and 65 15.4.4.4 Table 62 (2 times) 15.4.6.4 (2 times) 15.4.8.1 15.4.8.2 15.4.8.3 (2 times)	**Accepted, treated as editorial**
27	15.1.2	wr	e	n	figure 11 missing	locate figure	**Will be fixed, reference model picture, figure 1**

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Comment/Rationale	Corrected Text	Disposition/Rebuttal
28	15.2.1	wr	e	n	table 57, PLME_SAP primitive CCA_MODE should have ED & CS not ED + CS.	replace ED + CS with ED & CS	**accepted, changed to ED and CS**
29	15.2.6	wr	E	n	reference to transmission of MPDU should say PPDU	replace MPDU with PPDU	**accepted, editorial**
30	15.2.7	wr	e	n	descramble start and CRC end arrows in figure 83 are out of place	move the arrow to proper position	**Descrambler start is repaced to start of sync; CRC end is correct, it depicts the fields where the CRC is calculated over.**
31	15.2.7	wr	e	n	transition out of state VALIDATE PLCP should be labeled "PLCP Signal field out of SPEC"	insert Signal filed	**not accepted moved by John/Mike Service field is specified to be zeros for 802.11 compliance and should be checked. 4,0,1**
32	16	vh	e	no	Wrong use of capatilization	change MBIT?/S into Mbit/s: 16.2.3 on page 264 (6 times) 16.2.4.4 (2 times) 16.3.2.1 (2 times) 16.3.4.1 (2 times)	Comment accepted as editorial.
33	16 IR (all)	db	E	n	As there has been very little interest in the IR PHY for many meetings and no one at all has attended an IR PHY mtg for some time, should be simply delete the IR PHY for lack of interest? My concern is that it may have not been getting the review required and I would not like to see this crop up during sponsor ballot.		Comment rejected. While there is general agreement, it was felt that this would generate more NO votes than leaving it in. The IR section has been updated and comments processed by the full PHY group in the meetings which did not have any IR attendees. In addition, infra-red is defined in the PAR as one of the mediums supported. Mike/Roy 10,0,0

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Comment/Rationale	Corrected Text	Disposition/Rebuttal

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Comment/Rationale	Corrected Text	Disposition/Rebuttal