Collected comments on Section 8 of draft standard D1

5.2.1 8.x	Belanger	E	"Physical Carrier Sense Mechanism see section 8..." should be deleted or Section 8 should describe more explicitly how CCA information is passed to the MAC. Section 8 should explicitly state that the START OF ACTIVITY indication and END-OF-ACTIVITY indications are used for CCA	Section 8 does not define how Carrier Sense information is conveyed to the MAC.
8	David Bagby	T	In the Purpose portion of the D1 draft (page 1 section 2), the 802.11 PAR is quoted as saying that one of the purposes for creating an 802.11 standard is: To offer a standard for use by regulatory bodies to standardize access to one or more frequency bands for the purpose of local area communication. Note the words: "... to standardize access to one or more frequency bands...", they are core of the sentence and reflect the fact that the primary reason for creating a standard is to promote aggregate market growth via the establishment of multiple vendor interoperable devices. To accomplish this, 802.11 originally set out to investigate which PHY technology would best support the 802.11 goals, it also decided to concentrate it's initial efforts on the 2.4 Ghz ISM band. Unfortunately, PHY sub-group leadership has not encouraged the various PHY fractions to resolve their differences and recommend a single 2.4 Ghz ISM PHY. Instead the members have been encouraged to create smaller, independent sub-sub-groups whenever there was a difference of opinion. While this approach avoids controversy, it also does little to resolve differences and create the chartered PHY. The results have been that the draft now proposes multiple, non-interoperable, mutually interfering PHY proposals for a single band.	See imbeded comments and annotations

8	David Bagby continuation	T	This is a very dangerous situation to the emerging WLAN marketplace. The market (and 802.11 as a widely adopted standard) is crucially dependent on the perception that "802.11 compliant" will mean that an end user can buy devices from different vendors and be assured that they will interoperate. This will definitely not be true if the standard moves forward with multiple non-interoperable PHYs specified within a single band. **To allow this situation to exist in a draft that goes to sponsor ballot is tantamount to announcing that 802.11 has failed and that there will be no standard for WLANs.** Therefore, it is this member's conclusion that the draft can not be forwarded for sponsor ballot as 802.11 has not met the requirements of its PAR for this band. Until this situation is corrected, I shall not vote to forward the draft to sponsor ballot and my vote will remain "NO" until the 802.11 draft provides ***one*** phy specification for any band addressed by the standard (where a band was defined as a range of spectrum sufficiently separated in the frequency domain that phys in different bands are physically isolated from each other). The D1 draft proposes PHYs for two separate bands; 2.4 Ghz and IR. As only one phy is proposed for IR, it is my belief that the IR phy group has met the requirements of the PAR. Note that this reviewer makes no comment as to a preferred PHY proposal for the 2.4ghz ISM band. What is important is that the 802.11 members with PHY expertise get together, complete the task they set out to do, and come back to the 802.11 plenary with a recommendation for a single PHY for the 2.4 Ghz ISM band.[DB1] If the 2.4 Ghz ISM band situation can not be resolved in a short amount of time, I would vote for breaking the 802.11 draft into separate clauses. One clause for the architecture and MAC, and a clause for each band for which a PHY is specified. I would then vote to forward the clauses separately for sponsor ballot. This would avoid one group's inability to make progress from impeding the rest of the standard.	
8	Rick White	T	Must define primitives used for management and control of the PHY	Not defined.

8 (general), also affects 10 (general) Ñ CONTINUED FROM PREVIOUS ROW DUE TO STRANGE PAGINATION RESULTS FROM WORD6 IF PUT ENTIRELY IN ONE ROW	Fischer, Mike.	T MAJOR ISSUE	CONTINUATION OF COMMENT FROM PREVIOUS ROW, 2ND PARAGRAPH There is nothing stated in the existing PHY definitions that appear to justify the existence of such nonÐinteroperable PHYs in the same band (at least the number is down from 3 or 4 to 2). There is no obvious path to merge the two RF PHYs into a single PHY (based on the documents, I am not an RF expert). From a systems viewpoint, the simplest way to rectify this problem is to delete the FHSS PHY. Even if we retain the MAC features specifically needed because of the existence of an FHSS PHY (and there are MANY, which contribute much of the complexity of this MAC), the efficiency, performance, and predictability of the MAC will be better when not having to run over a PHY which quantizes time in a manner fundamentally antagonistic to MAC operation. The existing MAC definition already minimizes the penalties users of nonÐFHSS PHYs must pay to accommodate the possibility of an FHSSÐstyle PHY. Further discussion of the reasons for this as the preferred solution to achieving 1ÐPHYÐperÐband appear in the second paragraph in the column to the right. The following is an example of the class of problems discussed in the column to the right. It appears here to save space in the table, and is not part of any replacement or corrective text: *(As one, isolated example, if narrowband interference or fading causes an entire dwell to be unusable to communicate with the station addressed by the next outgoing MPDU at an AP, does the AP exhaust its retry counts trying to deliver that MPDU, wasting channel time on a lost cause? If so, there is reasonable chance that both the MSDU that this MPDU is a fragment of, and other MSDUs will be excessively delayed, perhaps even resulting in higher layer timeouts due to a side effect of the MAC trying to use a PHY with separatelyÐquantized time. If not, how does the MAC distinguish this situation from other communication failures over the WM which a simple retry can overcome, and how do we justify the added complexity of two fundamentally different retry strategies for FHSS and other PHYs? Also, does a perÐdwell retry strategy violate some fo the basic ordering assumptions on which duplicate filtering, acknowledgement, etc. are based? I doubt that this has been analyzed.)*	CONTINUED FROM PREVIOUS ROW, 2ND PARAGRAPH The reason that the FHSS PHY is less desirable and its removal provides the simplest solution to this problem is based in the fundamental epistemological incompatibility between FHSS behavior at the MAC/PHY interface and the needs of LANÐstyle MAC protocols. LANs (vs. emulations of LANs on circuitÐswitched media) are megabitÐrange (or greater) communication channels built from multiplexed usage of shared, halfÐduplex media among a (potentially) large number of stations. The MAC protocols for LANs facilitate this multiplexing by controlling the use of time on the medium by a wide variety of different techniques. In all other LAN environments, the medium (PHY) is timeÐinvariant, providing uniform potential accessibility, or the lack thereof, at any instant. (If somebody wants to discuss slotted rings, I will be glad to do so, but they are such a minor part of the LAN market that I will not take further space discussing them here.) When operating with an FHSS PHY, the PHY is controlling (or needing to have such control exercised on its behalf) the use of time to create the medium. This use of time is independent of the MACÕs use, producing a wide variety of boundary condition problems that complicate the MAC and reduce system efficiency and achievable throughput. Even worse, in the case of RF media, is the fact that the FHSS PHY relies on time diversity as its sole recovery mechanism for a variety of PHYÐlevel errors, including cochannel interference, multipath fading, and interÐchannel collisions when colocated PHYs hop to the same frequency at the same time. The serial, halfÐduplex nature of LAN media mandates that time be the recovery mechanism (retransmission, whether ARQ, explicitly requested, or left to higher layers) for partial or unsuccessful message transfer. Best case, this reduces efficiency and throughput by contending use of the same mechanism by two adjacent layers of the network protocol stack. Worst case this precludes operation as expected by LLC and higher layers by breaking the fundamental assumptions that MACs make about PHY properties. *(An isolated example of the symptoms this problem might cause is shown to the let in italics to save space in the table. This is only one example of a general problem, not a request for action to address this instance.)* Nobody has yet demonstrated to my satisfaction that the 802.11/D1 MAC is capable of running successfully over the FHSS PHY with worthwhile throghput and sufficiently tight bounds to make time bounded services practical; whereas, both the DSSS PHY and baseband IR PHY are capable of doing so. The inability of the FHSS PHY to allow a superframe longer than the hop dwell time, plus the definition of the CFÐlimit to guarantee contentionÐbased access in each superframe renders contention free service essentially useless on an FHSS PHY with typcial dwell.

8 (general), also affects 10 (general) Ñ THIS COMMENT CONTINUES IN NEXT ROW DUE TO STRANGE PAGINATION RESULTS FROM WORD6 IF PUT ENTIRELY IN ONE ROW	Fischer, Mike.	T MAJOR ISSUE	There should be no more than 1 PHY defined per frequency band. In this context, Òfrequency bandÓ can mean a physical range of nonÐoverlapping frequencies (such as the 2.400Ð2.483GHz ISM band vs. the 5.7Ð5.8GHz ISM band vs. 850nmÐ950nm IR band) or sets of modulation and encoding rules that permit simultaneous (not concurrent) use of the same physical range of frequencies without PHYs in either of these Òlogical bandsÓ causing destructive interference to transmissions by the other type of PHY in overlapping space, nor causing incorrect CCA indications (in either direction) when the one Òlogical bandÓ is in use when a receiver in the other Òlogical bandÓ senses the medium. It is unclear that implementations of this Òlogical bandÓ concept are practical for any of the objectives of 802.11. It is clear that the two PHYs defined to use the 2.4GHz ISM Band do not meet this Òlogical bandÓ criterion. Further discussion of the reasons for this 1ÐPHYÐperÐband appear in the first paragraph in the column to the right. THE SECOND PARAGRAPH FOR THIS COMMENT APPEARS IN THE NEXT ROW	The purpose of this standard is to promote the development of a WLAN market based upon mixedÐvendor, interoperable implementations of WLAN equipment. To include PHYs with fundamentally different physical properties (such as IR and RF) is sensible, as some applications need to communicate through walls while others benefit from lineÐofÐsight or singleÐroom limitations. To include PHYs which operate under differing regulatory rules (such as the 2.4GHz and 5.8GHz ISM bands, 1.9GHZ UDPCS band, etc.) is sensible, especially given the worldÐwide treatment of RF spectrum regulation. HOWEVER, to have mutuallyÐincompatible PHYs which operate in the same band will severely (perhaps permanently) cripple the WLAN market, and will negate much of the benefit of our having produced this standard. Some customers will be unwilling to deploy equipment until the market has sorted out the ÒwinningÓ PHY. Other customers will be unaware of the incompatiblity and either be disuaded from purchase by the uncertainty or be angry when they discover they have purchased incompatible equipment that claims conformance with the same standard. The development of the WLAN market (as a nonÐtarriffed alternative to packet radio, PCS, CDPD, etc. in local areas) will be selfÐlimited by infighting over FHSSÐvsÐDSSS issues, which will divert resources from cost reductions (lower volumes, less economy of scale), market education, generating enough installed base to be noticed by the FCC, etc. From strictly a market result point of view, what the PHYs are in each band is not as relevant as picking the right bands and having 1 PHY per band. However, in the current instance, there are technical reasons at the system level to chose one of the two PHYs: CONTINUED W/ 2ND PARAGRAPH IN NEXT ROW
8 (global), also affects 1.3	Fischer, Mike.	E	The use of ÒPhLÓ and ÒPhSÓ is unique to this chapter and is unnecessary. This usage should be globally replaced by ÒPHYÓ	clarity, consistency

8, 9, 10, 11, 12 (general PHY issue)	Fischer, Mike.	T MAJOR ISSUE	There should be a common basic TXVECTOR and RXVECTOR for all PHYs, defined in chapter 8 and detailed in each PHY chapter. The best situation would be for the TXVECTOR and the RXVECTOR to be fully identical in content and encoding for all PHYs, and for all PHYÐspecific information to be communicated via the PLME_SAP. A less desirable, but acceptable, alternative is for the first several elements of these vectors to be common, with PHYÐspecific elements located after the common elements. The recommended common TXVECTOR elements are: (1) MPDU length in octets (16 bit integer), and (2) TX rate in 100Kbps increments (8 bit integer). Other items, such as (3) TX Antenna selection (8 bit integer, ignored by PHYs that do not have selectable TX antennae), and (4) TX Channel selection (8 bit integer, ignored by singleÐchannel PHYs) could be included if all PHYs agree to include them. Otherwise all antenna and channel modalities should be moved to the PLME_SAP. The recommended common RXVECTOR elements are: (1) MPDU length in octets (16 bit integer, MUST be the same value as was passed down in the TXVECTOR of the corresponding transmission), RX rate (same encoding as TX rate, 8 bit integer), and (3) RX Antenna used (same encoding as TX antenna, 8 bit integer, reported as zero by PHYs that do not have selectable antennae), and (4) RSSI/RX Signal Quality (8 bit integer reporting relative signal quality 0Ðlow, 255Ðhigh, not all codes values must be reportable, for more detail read out PHYÐspecific parameters using the PLME_SAP).	The purpose of the TXVECTOR and RXVECTOR are communication of information across the MAC/PHY boundary. To use completely different representations for the same information at the MAC/PHY boundary (a) complicates the MAC, (b) impairs the ability to actually use the same MAC above a plurality of PHYs, (c) decreases the likelihood that we can construct confirmance tests in the absence of an exposed MAC/PHY interface, (d) increases the likelihood that there will be incommensurate specifications and expectations between the MAC and at least one of the PHYs.
8.	Bob O'Hara	E	correct service primitive syntax throughout	
8.	C. Thomas Baumgartner	e	Is't b) of sentence supposed to read by MAC to PhL?	reciprocal direction of messages on interface missing
8.	John Hayes	E	Should be b) by MAC to PhL.	Self explanitory.
8.	John Hayes	E/T	TBD	Define c) Other.
8.	Bob O'Hara	T	delete "c) Other (TBD)"	there can not be TBDs in the standard
8.0	Renfro	E		Need to be consistent. Use PHY instead of PhL.
8.1	Siep	T	Detailed Service Specification ~~All primitives are specified in an exemplary form only.~~	This is an oxymoron: an example is not a specification. This "specification" indicates that the MAC/PHY interface is only an octet-at-a-time. That is not an acceptable limitation.

8.1 2.9, also	Fischer, Mike.	T MAJOR ISSUE	The optional, exposed DTE/DCE interface at the MAC/PHY boundary is identified in section 2.9, but defined nowhere in the document. This should be corrected by including the definition of such an exposable interface. A plausible definition for this interface appears in document 95/16. {NOTE: I encourage members of 802.11 who doubt that an abstracted, exposable interface between MAC and PHY is achievable to read a recent draft of IEEE P1394ÑHigh Performance Serial Bus (I believe the latest released draft is D6.8, dated March 1994 and available from IEEE Standards Dept. as an unapproved draft.), P1394 has defined, in addition to a fullyÐspecified exposed interface at the bus cable connection point, an abstracted interface between their functional blocks equivalent to MAC and PHY which adds very few constraints not already inherent in their protocol and the available implementation technologies. If 802.11 can define the exposable DTE/DCE interface to a similar degree of Òprecise abstraction,Ó the need to define the realization of the optional exposed interface (connector, pin assignments, signal levels) is delayed until after publication of the first version of the standard, and perhaps delayed indefinitely.	This optional exposed interface is needed for several reasons: a) The existence of multiple PHYs using the same MAC creates situations where users will have reason to deploy infrastructures based upon different PHYs at different sites (for example due to regulatory differences at those sites or different nearby sources of interference in different frequency bands). For a class of communication devices which are specifically intended to support and facilitate mobility, there needs to be a means (allowed, not mandated, hence the optional nature of this exposed interface) for the user to easily change PHYs. While changing the MAC/PHY as a set is possible, much of the usage of wireless LAN communication is for equipment that needs to be small, lightweight, and reasonably resistant to environmental contamination. Providing the basis for a mixedÐvendor way to build the MAC functionality into these sorts of portable devices, while allowing the PHYs to be changed at the exposed interface, is highly desirable. The precedent for this already exists in 802.3, which has an exposed interface (AUI) that allows a MAC control function to be built into a piece of equipment while permitting the user to easily change mediaÐspecific adapters for use in different sites. The greater complexity and functionality embodied in the 802.11 PHYs is due to the use of wireless media, not due to an architectural difference in the MAC/PHY relationship. b) The PAR requires that 802.11 use the same MAC over all of the different PHYs. If there are no exposed interfaces between the LLC and the WM, there is no way to interoperate between MAC implementations that are pared with different PHYs, hence neither a way to demonstrate compliance with the PAR nor a justifiable reason for this provision of the PAR. We need either to define this interface or to modify the PAR, then generate separate, PHYÐspecific MACs for each PHY (802.11a, b, c . . .) c) If we are going to retain multiple, nonÐinteroperable PHYs in a single frequency band, users will demand some way to preserve at least part of their investment in network adapters (if they will be willing to make an investment in the first place). In my comments concerning section 8.1, I make some other comments regarding the use of different PHYs in the same frequency band, but as long as PHYs such as the current DSSS and FHSS for 2.4GHz band exist, there is yet another reason to provide this exposed interface. To do otherwise is likely to relegate the applicability of the results of our work to a niche no larger than that for wireline modems that only are able to provide their published performance when calling to another, identicalÐmodel modem.
8.1.1	C. Thomas Baumgartner	e	under Acceptable Combinations d) delete “assessment” following “CCA”	assessment redundant to CCA

8.1.1	Dean Kawaguchi	E	~~Ph-~~ PHY_DATA request This primitive defines the transfer of data from the MAC entity to the Ph entity. ~~Ph-~~ PHY_DATA request (Class, Data) **Class.** This parameter specifies the Ph interface control information component of the ~~Ph Interface~~ Physical Service Data Unit (~~PhIDU~~ PSDU). The possible values are: ~~a) START-OF-ACTIVITY - request transmission of PhPDU (i.e. preamble and Ph headers) prior to Ph user data transmission.~~ ~~b) DATA - request the transfer of the associated single octet 'Data' parameter.~~ ~~c) END-OF-DATA-AND-ACTIVITY - request:~~ ~~d) transmission of the PhPDU terminating the Ph user data transfer immediately following the last Ph data user transfer.~~ ~~e) cessation of active transmission.~~ **Data.** This parameter supplies additional information required to execute the specific primitive. In the case of a ~~Ph-~~ PHY_DATA.request with class START-OF-DATA ~~ACTIVITY~~, it provides specific values for the interface control parameters associated with a specific ~~Ph-~~PHY-Layer type. In the case of a ~~Ph-~~ PHY_DATA.request with class DATA, it provides the specific value of the user data to be transmitted. **Acceptable Combinations** a) class=Start_of_Data, data=TXVECTOR ... (The rest is fine)	The vote taken in November was to replace the classes with the new classes in 94/241.
8.1.1	Renfro	E		Under Acceptable Combinations, a); I think 'Start_of_Data' should be 'Start_of_Activity'.
8.1.1	Bob O'Hara	T	define values for d) and e)	not defined
8.1.1	C. Thomas Baumgartner	t	under Class paragraph d) and e) are part of c), not possible values of Class. Can make d) and e) into 1) and 2)	hard enough to understand without improper formating
8.1.1	C. Thomas Baumgartner	t	under Acceptable Combinations a) change to Class=Start_of_Activity	there is no such Class as Start_of_Data according to paragraph above
8.1.1	C. Thomas Baumgartner	t	There are contradictions in many places about whether there are separate Class values of End_of_Data and End_of_Activity or just a Class value of End_of_Data_and_Activity for Ph-DATA request primitave	c) and d) under Acceptable Combinations conflict with the paragraph on Class. Is there one value called End_of_Data_and_Activity or are there two separate values called End_of_Class and End_of_Activity? Paragraph 8.2.2 refers only to former.

8.1.1	Fischer, Mike.	T MAJOR ISSUE	This section is inconsistent, both internally and with the subsequent PHY chapters. The primitives should be: PHY_DATA.request(Start_of_Data, TXVECTOR) PHY_DATA.request(Data, Data_octet) PHY_DATA.request(End_of_Data, Null) PHY_DATA.request(End_of_Activity, Null) These should be described and used consistently in this section and the subsequent sections.	Consistency among PHY definitions & meeting the needs of the current PHYs (vs. whenever this text was written).
8.1.1	Wim Diepstraten	T	This section specifies in its "Acceptable combinations" section under bullet d), an implicit MAC behaviour. This behaviour requires the MAC to initiate a Ph-DATA.request(End_of_Activity), whenever the NAV timer has ended. This is a behaviour that is new to the MAC, and which is not incorporated in its State Machine descriptions.	The specified function is currently not specified in the MAC.

8.1.2	Dean Kawaguchi	E	~~Ph-~~ PHY_DATA indication This primitive defines the transfer of data from the Ph entity to the MAC entity. ~~Ph-~~ PHY_DATA indication (Class, Data) **Class.** This parameter specifies the ~~Ph~~ PHY interface control information component of the ~~Ph Interface~~ Physical Service Data Unit (~~PhIDU~~ PSDU). The possible values are: ~~a) START-OF-ACTIVITY - indicates reception of an apparent transmission from one or more peer Ph entities.~~ ~~b) DATA - indicates that the associated 'Data' parameter was received as part of a continuous correctly structured reception.~~ ~~c) END-OF-DATA - indicates that the continuous correctly structured reception of Ph user data is concluded with correct reception of PhPDU implying end of data.~~ ~~d) END-OF-ACTIVITY - indicates that the ongoing reception (of an apparent transmission from one or more peer Phs) is concluded, with no further evidence of Ph transmission.~~ ~~e) END-OF-DATA-AND-ACTIVITY - indicates the simultaneous occurrence of the end of Ph user data and activity.~~ **Data.** This parameter supplies additional information required to execute the specific primitive. In the case of a ~~Ph-~~ PHY_DATA.indication with class START-OF-ACTIVITY, START-OF-DATA, END-OF-DATA, or END-OF ACTIVITY ~~or END-OF-DATA-AND-ACTIVITY~~, it provides specific values for the interface control parameters associated with a specific Ph-Layer type. In the case of a ~~Ph-~~ PHY_DATA.indication with class DATA, it provides the specific value of the user data to be transmitted. **Acceptable Combinations** a) class=Start_of_Activity, data=NULL ... (The rest is fine)	The vote taken in November was to replace the classes with the new classes in 94/241.
8.1.2	Bob O'Hara	T	delete unused class (END_OF_DATA_AND_ACTIVITY) or define in acceptable combinations	not defined
8.1.2	C. Thomas Baumgartner	t	b) under Acceptable Combinations conflicts with the paragraph on Class which does not define a Start_of_Data	consistency needed. Should a Start_of_Data value be defined? Paragraph 8.2.2 does not use this value in describing the receiving sequence.

8.1.2	Fischer, Mike.	T MAJOR ISSUE	This section is inconsistent, both internally and with the subsequent PHY chapters. The primitives should be: PHY_DATA.indicate(Start_of_Activity, Null) PHY_DATA.indicate(Start_of_Data, RXVECTOR) PHY_DATA.indicate(Data, Data_octet) PHY_DATA.indicate(End_of_Data, RXERROR) PHY_DATA.indicate(End_of_Activity, Null) These should be described and used consistently in this section and the subsequent sections. Also Ñ the Start_of_Data should explicitly be defined to indicate the receipt of a valid PLCP header (e.g. HEC has arrived and shows correct reception), By doing so, an ÒapparentÓ start of reception, as indicated by Start_of_Activity can be distringuished from an actual start of relevant reception by the expiration of a (PHYÐspecific) duration after the Start_of_Activity without the occurrence of a Start_of_Data.		Consistency among PHY definitions & meeting the needs of the current PHYs (vs. whenever this text was written).
8.1.2, 4.2.1.2, and 4.2.1.3	D. Johnson	T	Document 11-94 / 259a has acceptable wording.	The MAC, to be universal, should have a mechanism for implementing transmitter power control even if the presently specified PHYs cannot implement it. Preliminary studies show that at least 2:1 throughput density per Hertz of bandwidth can be achieved with power control. The scarcity of spectrum dictates that a method must be available to achieve this added throughput capability as technology advances. This is one of the reasons for the no vote.	
8.1.3	Bob O'Hara	T	insert "Ph_DATA.request" after "previous" in first sentence		removes ambiguity
8.1.3	Bob O'Hara	T	define acceptable combinations		not defined
8.1.3	Fischer, Mike.	T	This section should use PHY_DATA.confirm(Status), as should subsequent sections. A recommendation is to represent ÒsuccessÓ as Status =0 so that failure causes can be encoded in the nonÐzero value of ÒfailureÓ status. Also, in the 2nd-to-last line, change ÒbyteÓ to ÒoctetÓ		Consistency, flexibility
8.1.4	Bob O'Hara	E	delete		
8.1.4	John Hayes	T	TBD		Needs to be specified.
8.1.4	Siep	T	Others[Delete or specify]		A standard must be complete in order to be functional.
8.2.1	Belanger	E	2.54 GHz should be 2.4 GHz		
8.2.1	Bob O'Hara	E	replace "insure" with "ensure"		Proper usage.
8.2.1	C. Thomas Baumgartner	e	change b) by removing "This specification is intended to"		doesn't grammatically fit with list of basic services as written
8.2.1	C. Thomas Baumgartner	e	change c) by removing "The intention is to"		doesn't grammatically fit with list of basic services as written
8.2.1	C. Thomas Baumgartner	e	change d) to read--pass information regarding the characteristics of the receive signal and current state of Ph Control Parameter Vector on a frame by frame basis; adjustment of transmission parameters by the Data Link Layer on a frame by frame basis; pass conventional management information on a per request basis		doesn't grammatically fit with list of basic services as written

8.2.1	Dean Kawaquchi	E	General Description of Service Provided The interface specification proposed provides the following basic services: a) Transfer Physical ~~Layer Interface~~ Service Data Units (~~PhIDUs~~ PSDU) between the ~~Data Link Layer (DLL)~~ Media Access Control (MAC) Layer and the Physical (PHY)Layer ~~(PhL)~~ in a manner consistent with ISO 7498 [3]. b) This specification is intended to insure interoperability between conformant stations of the same Physical Layer type c) The intention is to support a variety of different ~~Ph's~~ PHYs, using a common medium independent interface. The current defined ~~Ph~~ PHY types are: Direct Sequence Spread Spectrum (DSSS) in the 2.~~54~~ GHz ISM Band, Frequency Hopping Spread Spectrum (FHSS) in the 2.~~54~~ GHz ISM Band and baseband IR. ~~d) In addition to PhIDU's, information regarding the characteristics of the receive signal and current state of Ph Control Parameter Vector are passed across the Ph-DLL interface on a frame by frame basis. There is also the capability for the adjustment of transmission parameters by the Data Link Layer on a frame by frame basis. This is in addition to conventional station management information on a per request basis.~~	Old text is out of date
8.2.1	Dean Kawaquchi continuation	E	~~a) a single Ph-DATA indication specifying START-OF-ACTIVITY, followed by consecutive Ph-DATA indications specifying DATA, followed by a single Ph-DATA indication specifying END-OF-DATA, and concluded by a single Ph-DATA indication specifying END-OF-ACTIVITY; or,~~ ~~b) a single Ph-DATA indication specifying START-OF-ACTIVITY, followed by consecutive Ph-DATA indications specifying DATA, followed by a single Ph-DATA indication specifying END-OF-DATA-AND-ACTIVITY; or,~~ ~~c) a single Ph-DATA indication specifying START-OF-ACTIVITY which may be followed by one or more consecutive Ph-DATA indications specifying DATA, and concluded by a single Ph-DATA indication specifying END-OF-ACTIVITY (note: this last sequence is indicative of an incomplete or incorrect reception).~~ The Ph entity may also reports a set of ~~Ph~~ PHY specific parameters using the signal parameter vector (i.e. signal quality, channel used, received signal strength etc.). This reporting is synchronous with the reporting of the data on a frame by frame basis and is implemented through the use of the data parameter of the ~~Ph~~ PHY_DATA.indication primitive when the class is ~~anything other than DATA~~ START_OF_DATA. In addition, when requested by the Station Management entity, information on the managed objects will be reported by the ~~Ph~~ PHY entity through the Layer Management Service Access Point (LMSAP)	
8.2.1	Mahany	E	2.54 GHz should be 2.4 GHz or 2.45 GHz.	Typo
8.2.1	N. Silberman	E	2.54 GHz should be 2.4 GHz	
8.2.1	Bob O'Hara	T	replace "2.54" with "2.4"	proper band
8.2.2	A. Bolea	E		Note 1 is referenced but is missing from text.

8.2.2	C. Thomas Baumgartner	e	where is Note 1 that is referred to after packet size?	missing info to which there is a reference
8.2.2	Dean Kawaguchi	E	Overview of Interactions The transmission of normal data between ~~Physical (Ph) and Data Link (DL)~~ MAC and PHY entities takes place via the Physical Service Access Point (PhSAP). The ~~Ph~~ PHY entity determines the timing of all transmissions. When the MAC entity is ready to transmit a ~~MAC Protocol~~ PHY Service Data Unit (~~MPDU~~ PSDU), it shall pass the ~~MPDU~~ PSDU ~~with the concatenated FCS~~ to the ~~Ph~~ PHY entity using a sequence of ~~Ph~~ PHY_DATA request primitives. This sequence of requests consist of a single ~~Ph~~ PHY_DATA request specifying START-OF-DATA ~~ACTIVITY~~, followed by n consecutive ~~Ph~~ PHY_DATA requests specifying Data (where n defines the packet size (note 1)), and concluded by a single ~~Ph~~ PHY_DATA request specifying END-OF-DATA~~-AND-ACTIVITY~~. The data parameter of the ~~Ph~~ PHY_DATA.request primitive is used to convey specific values of interface control information parameters when the class of the ~~Ph~~ PHY_DATA.request primitive is START-OF-DATA ~~ACTIVITY~~. (editor note: the minimum and maximum packet sizes are TBD - September 1993)) The ~~Ph~~ PHY entity signals the process completion of each ~~Ph~~ PHY_DATA request primitive and its readiness to accept a new ~~Ph~~ PHY_DATA request with a ~~Ph~~ PHY_DATA.-confirm primitive. A ~~Ph~~ PHY_DATA request should not be issued by the MAC entity until a ~~Ph~~ PHY_DATA confirm corresponding to the previous request has been received from the ~~Ph~~ PHY entity. The Ph entity reports, using the data SAP (PhSAP), a received MPDU with a sequence of Ph-DATA indication primitives which shall consist of a single PHY_DATA.indication specifying START-OF-ACTIVITY indicating that the channel is busy, followed by a PHY_DATA.indication specifying START-OF-ACTIVITY indicating a valid PLCP header has been received, followed by consecutive PHY_DATA.indications specifying DATA, followed by a single PHY_DATA.indication specifying END-OF-DATA, and concluded by a single PHY_DATA.indication specifying END-OF-ACTIVITY.	Old text is out of date.
8.2.2	Renfro	E		Where is note 1?
8.2.2	Bob O'Hara	T	delete or define "note 1"	not defined
8.2.2	Rick White	T	The PHY does not control the timing of transmission, the MAC does. This must be corrected.	The MAC must control the timing of transmission in order to implement the basic CSMA/CA access method. The PHY must do what it is told to do.

8.2.3	C. Thomas Baumgartner	e	In third paragraph delete "The MAC will be able to change channels using the PhSAP"	Redundant with sentence in first paragraph and not consistent with third paragraph content.
8.2.3	Bob O'Hara	T	Define "jabber control function"	not defined
8.2.3	C. Thomas Baumgartner	t	If jabber control function is not explained more somewhere else need definition here	How can compliance be tested with present definition in this paragraph?
8.2.3	John Hayes	T	TBD	"PHY entities shall implement a jabber control function." The definition of what a jabber is for each of the various PHYs is not defined. Nor is a jabber control function.
8.2.3	Mahany	T	Jabber Control Function requirements must be defined. or delete section Transmitter must be disabled if it remains active longer than 110% of aMPDU_Maximum	Not sufficient for implementation without this info
8.2.3	N. Silberman	T	last line: Jabber control function should be defined and specified, followed by a Jabber state machine.	Non uniform jabber function will create chaos in the network.
8.2.3	Renfro	T		Where is threshold described in third paragraph?
8.xx	Geiger	T	This section is in desperate need of a rewrite. It is common practice in IEEE standards to list the semantics of each primitive, along with their function, when they are generated and the effect of the receipt of each primitive. These PH_DATA.xx semantic is bulkly and nondescriptive of what services are actually being provided by each primitive.	I will submit new text for this section in a separate submission