Section 12 comments and responses from Ballot on Draft Standard D2 (Mike Trompower, DS PHY Editor, Aironet)

1	12.1	MRo	e		Second sentence, replace period with comma. Delete Third paragraph The DSSS system provides a wireless LAN with both a 1 Mb/s and a 2 Mb/s data payload communication capability. According to the FCC regulations, The DSSS system must provide a processing gain of at least 10 dB. This is accomplished by chipping the baseband signal at 11 MHz with an 11-chip Barker sequence. The DSSS system uses baseband modulations of Differential Binary Phase Shift Keying (DBPSK) and Differential Quadrature Phase Shift Keying (DQPSK) to provide the 1 and 2 Mb/s data rates, respectively.	This is useful information, but is extraneous to the standard. Similar sections are not included in other PHY's.	Comment accepted, editorial change made
2	12.1	ws	e		Under Intro - 3rd paragraph - "insensitiveness" to "insensitivity"	wrong word	obsolete due to acceptance of previous comment
3	12.1.3	ws	e		Consistency - each chapter should have definitions or else all definitions should go to the fron	Consistency	tabled until after consult with editors of overall document. If move is agreed they will make the change.
4	12.2.2	ZJ	T	N	Insert "duration (DUR)," between "(LENGTH)," and "and", and update figure 12-2 to include a 16-bit DUR field before the PLCP CRC.	Duration information should be part of the PLCP header, not the MAC contents of the frame. Since units communicating at lower speeds cannot receive the MAC contents of a frame transmitted at higher speed, but all stations can receive the PLCP header for all frames (in all PHYs), it is logical to move Duration to where everyone in the BSS can receive it (I don't care if it violates layer purity).	
5	12.2.3	MB	e		last sentence.... scrambler described in section 12.2.4		accepted
6	12.2.3.5	MB	e		1st sentence....defined by aMPDU_maximum[per 10.1.4.~~23~~ 21]) to be transmitted		reference changed to reflect 10.1.1.2 and changed references to aMPDU_Max_Lngth_1M and

								aMPDU_Max_Lngth_2M
7	12.2.3.5	ws	e		aMPDU_maximum referenced in text (incorrectly - 23 instead of 37) but seems to have been deleted			see comment #6
8	12.2.3.6	ZJ	T	N	Insert a new 12.2.3.6 PLCP Duration Field (DUR). "The PLCP duration field is an unsigned 16 bit integer that takes on values between 0 and 32767, as specified by the MAC in the TXVECTOR. This field is used by the MAC for collision avoidance calculations. This field is protected by the CCITT CRC-16 frame check sequence described in 12.2.3.7"	Duration information should be part of the PLCP header, not the MAC contents of the frame. Since units communicating at lower speeds cannot receive the MAC contents of a frame transmitted at higher speed, but all stations can receive the PLCP header for all frames (in all PHYs), it is logical to move Duration to where everyone in the BSS can receive it (I don't care if it violates layer purity).		
9	12.2.3.6	ZJ	T	N	Change subclause number to 12.2.3.7. Change ", and LENGTH" to ", LENGTH, and DUR"	Duration information should be part of the PLCP header.		
10	12.2.6 12.2.7	DW	T	Y	These sections do not comply with the Physical service specification in section 9.3. This should be corrected.	New primitives PHY_TxStart.request, and PHY_RxSTART.indicate need to be adopted in this section. There is additional confusion because the same primitives names that are now defined between MAC and PHY, are the same as between the PLCP and the PMD.		
11	12.2.6	DW	T	Y	There is no separate management request specified to allow independent selection of the Channel (CHNL_ID). The current method can only change channel by a PHY_DATA.request(Start-OF-Activity) using the TxVector parameter set. This is unacceptable, because a transmit command seems needed to accomplish a channel select change. Why not use the PLME_SAP with a separate request.	A separate management interface primitive between the MLME and PLME may need to be specified to accomplish this. The spec seems inconsistent, because section 12.2.7 does mention that the CHNL_ID is to be set via the LMSAP.		
12	12.2.6 12.2.7	FMi	T	N	These sections and their illustrations need to be updated to use the PHY service primitives defined in clause 9.	Consistency, operation with a MAC that uses those service primitives.		
13	12.2.6	DW	T		No provisions are available for controling the Doze/Awake state of the PHY. A PLME_SAP request needs to be specified for this.			

14	12.2.6 9.3.4.3 9.3.4.4 11.2.2 13	BJa	E		The desciption of the service primitives and vector descriptions is not aligned for the different sections. Definition of the primitives and parameters that are common for the different Phy's must appear in section 9, while value definition that are Phy dependant must be defined in the respective sections.		
15	12.2.6 12.2.6.1 12.2.7 12.2.7.1	ZJ	T	N	Modify figures 12-5 through 12-8 to include DUR field in PLCP header.	Duration information should be part of the PLCP header, not the MAC contents of the frame.	
16	12.2.6.1	DM	e		Change numbering to remove single subsections. There should always be more than 1 subsection.	If there is only one subsection then the subsection should become a section of the next higher level. The purpose of a subsection is to break a section down into more parts. If there is only one part then it doesn't warrant a subsection.	accepted - section header deleted
17	12.2.7	BJa	T	N	Add text to end of section 12.2.7: The receiver remains in the state 'decrement length ' (see fig 12-8) until length is 0. During this period CCA will indicate activity on the medium. If the length count is zero the receiver returns to the RX idle state.	If carrier is lost (e.g. due to a fade) prior to the end of the MPDU, while the PLCP CRC was correct, a transmission is still going on. In this situation it is beneficial that the transmitter is not able to start a transmission until the lengthcounter expires.	accepted - text added to 12.2.7 and 12.4.8.4
18	12.2.7 12.2.8	BJa	E		Description of errorconditions in the sections must be brought in line with TXERROR and RX ERROR as defined in section 9. The same is true for PHY_DATA.indicate(END-OF-ACTIVITY) and PHY_RXEND of section 9.		
19	12.2.7.1	BJa	T	N	Take out "or PLCP Field Out Of Spec." at middle right of figure 12-8.	This condition is not described in the text of 12.2.7. There is no reason to reset to RX idle state if the PLCP header is correctly received(with correct CRC). A DS frame with a PLCP header is being sent. It is better to process the frame. Reacting in this way will not block possible coexistence with future developments.	rejected in current form - pending outcome of DURATION field addition to PLCP, there will be an additional state added to RX state machine to hold CCA busy for the expected duration

20	12.2.7.1	DM	e		Change numbering to remove single subsections. There should always be more than 1 subsection.	If there is only one subsection then the subsection should become a section of the next higher level. The purpose of a subsection is to break a section down into more parts. If there is only one part then it doesn't warrant a subsection.	accepted - section header deleted
21	12.3.3.x	ws	e		The indentation for all subhead listings is shifted too far left		accepted - tabs added
22	12.3.4	TM	e/T	X	add to table 12-2 a mechanism to choose a CCA method and/or specify a RSSI threshold. update 12.4.8.4 accordingly		accepted - table 12-2 updated with new MIB variables. section 12.4.8.4 updated to reflect all modes of operation
23	12.3.4	DW	T		Why is MAC_prc_Delay not applicable? In what way is this included in the SIFS and Slot time parameters.		rejected (is this just a question or a request for a change?)
24	12.3.4	TM	e/t		aReg_Domains_Suprt and aCurrent_Reg_Domain imply that all channels in a particular domain should be implemented. as appropriate, update text in 12.4.6.1 and 12.4.6.2 to maintain consistency		accepted - text added to 12.4.6.2 MIB parameter added to table 12-2
25	12.3.4	TM	e/t		aSuprt_Data_Rates implies optional rate support whereas other areas of section 12 (12.1) imply mandatory support of 1 and 2 Mb/s		1 and 2 Mbps are both mandatory. The MIB variable is for consistency with other PHYs
26	12.3.4	MRo	E		Coordinate Formatting for Table 12-2 with other PHY's, eg. Table 11-16.		they do
27	12.3.4	ws	e		The presentation of managed objects should be consistent . This presentation seems superior.	consistency	OK, thank you
28	12.4.4	FMi	T	N	The primitives and parameters defined at the PMD_SAP conflict with the names defined for the primitives and parameters at the PHY_SAP by clause 9. The PMD_SAP services need to be renamed and the subsections of 12.4.4 need to be updated.	Consistency with the global PHY service definitions, which are also used by the MAC state machines on the other side of the PHY_SAP.	
29	12.4.5.13	MB	e		Effect of receipt section. SQ_THRESHOLD parameter is indicated to reference 12.4.5.11. That section relates to the PHY_RATE. I was unable to find the section relating to SQ_THRESHOLD in the document. What is the correct reference?		delete reference to SQ_Threshold by deleting last sentence of this section. updated RSSI and ED primitives to be optional, added PHY_ED.request to set the ED THRESHOLD value.

30	12.4.5.7	MB	e		Effect of Receipt PHY_DIVERSITY immediately alters the receive state machine according to the DIV_CONTROL		accepted
31	12.4.6.1 12.4.6.2	TM	e		update text to be specific as to channel support functionality (ie., are all channels available for use in each regulatory domain)		accepted - see comment #24
32	12.4.6.6	ws	e		Consistency - Some times it is "usec" and sometimes it is "usec."	consistency	ok will use usec without the period
33	12.4.7.1	MRo	t	X	The maximum Equivalent Isotropically Radiated Power (EIRP) as measured in accordance with practices specified by the regulatory bodies is shown in Table 12-8. In the USA, the radiated emissions should also conform with the ANSI uncontrolled radiation emission standards (ANSI document C95.1 published in 1991).In the USA Equipment installed to meet ANSI controlled emissions limits may produce EIRP up to 4 W.	An EIRP specification prohibits use of gain antennas, EIRP of 4 W max under US regulations. This may be feasible in point to point links where installation in accordance with ANSI controlled installation standards is possible.	table 12-9 and text updated to reflect the maximum output power before any allowed antenna gain. Europe labled as EIRP since no antenna gain is allowed above 100mW ouput power
34	12.4.7.1	MB	e		1st sentence.........by the regulatory bodies is shown in Table 12-8 12-9		accepted
35	12.4.7.1	ws	e		Table 12-9 is broken in two.	readability	will repair in final edit documents
36	12.4.7.7	MRo	t	X	Figure 12-11. Add maximum overshoot of 3 dB, unless governed by more restrictive local geographic regulations.	Undefined	rejected - we choose not to define instanteous peak power limits beyond regulatory rules because it is not an interoperability or performance issue
37	12.4.8.1	MRo	E		Change second sentence The Frame Error Rate (FER) shall be less than $8*10^{-3}$ at a Frame length of 1024 bytes for an input level of -80 dBm measured at the antenna connector. **This FER is specified for conformant 2 MBPS modulation.** The test for the minimum input level sensitivity shall be conducted with the energy detection threshold set less than or equal to -80 dBm.	clarity	editorial change made for clarity. Also, changed FER to $8*10^{-2}$ to correct an editorial oversight on this value which translates to a BER of 10^{-5}

38	12.4.8.3	MB	e		2nd sentence........to the transmit mask specified in section 12.4.7.3 .4 to a level 41 dB above...........		accepted - change made
39	12.4.8.4	TM	E/T	X	what measurements are used on carrier sense before declaring valid CCA (ie, x out of 11 chips decoded correctly for y number of symbols)		Signal Quality measurements will be implementation dependent. CCA will show busy medium within 15 usec of valid signal present at the receive antenna within 5 usec of the start of slot period
40	12.4.8.4	TM	E/T	X	regarding the conformance statement, what measurements on quality are used (ie, at the sub-symbol level use the number of correctly decoded chips or at the symbol level use a correctly received packet)		Signal Quality measurements will be implementation dependent
41	12.4.8.4 12.2.7	DW	T		It should be explained here that once the CRC of the PLCP Header is correct, then the CCA shall indicate a Medium Busy, untill the length count is decremented to zero, independent of PHY_ED and PHY_CS. Also Add text to end of section 12.2.7: The receiver remains in the state 'decrement length ' (see fig 12-8) until length is 0. During this period CCA will indicate a Busy medium, independent of the PHY_CS.indicate. If the length count is zero the receiver returns to the RX idle state.	If carrier is lost (e.g. due to a fade or any other condition) prior to the end of the MPDU, while the PLCP CRC was correct, a transmission is still going on. In this situation it is beneficial that the transmitter is not able to start a transmission until the lengthcounter expires. In addition this operation is required to assure that coexistance with future PHY's that may have different modulation during the PLCP_PDU.	accepted - text added to 12.2.7 and 12.4.8.4 see also comment #17
42	12.4.8.4	TM	E		conformance test statement should be moved to a separate (new subsection) section and be added to information contained in DOC-95/200		historical - will stay in this section as well as be added to conformance spec section
43	12.x, 11.x, 13.x	TM	T		There should be a method in the standard whereby the basic rate of the network is fixed (ie., all data, PLCP headers, and control packets are transferred at a 2 Mb/s rate)	This will allow for maximum system throughput (at the expense of cell size)	Rejected - even though the 2Mbps is a mandatory rate, the BPSK 1 Mbps header is required for simple receiver structure and is very ingrained into the history of this section