Collected comments on Section 11 of draft standard D1

11.1	C. Thomas Baumgartner	e	Delete Figure 11-1: Protocol Reference Model, add reference to general model in another part of document	This is a general model of the interaction of the layers and should be somewhere in the general specification not in the DSSS section. There is more detail in Figure 10-1 so this is the one that should survive.
11	Jeff Rackowitz	E	General Comment. Verify that P802.11-93/050r4 to r5 changes were reflected in 802.11d1. The error in 11.4.6.2 was caught in r5 but not in d1.	
11	Wim Diepstraten	E		Suggest to add a table with an overview of the PHY specifications like turnaround times, slot times etc.
11	Wim Diepstraten	T	Specify a minimum RSSI threshold for which a PMD_CS will be generated. This threshold should be specified as function of the TXPWRLEVEL that is being used by the transmitter. This should allow a MAC to decrease the TxPower level, and the associated CCA sensitivity for co-channel signals, to increase the medium reuse when a lower power level can be used to reach a destination.	There is no level sensitivity threshold applied to the PMD_CS. Currently the specification of the PMD_CS is done relative to a PMD_CS.threshold, or SQ_Threshold (equivalently used in the text). There is however not a quantative definition of a SQ_Threshold, and it is unclear whether this PHY MIB parameter is mandatory.
11 (missing)9 (all), 10.9,	bdobyns	T	Eliminate Section 10.9 FHSS PHY MIB, reconcile and merge content of 10.9 with 9.0 Fabricate content for DSSS PHY MIB and merge with 9.0	All three PHY should reference same MIB. Section 9 and Section 10.9 must be reconciled with each other, as well as with the DSSS PHY (section 11)
11, ch 10 , 11	MLT	E	maintain uniformity between description of data whitener or use a reference to a common location where it described only once	
11, ch 10,11,12	PFS	E	PLCP general descriptions should use similar language and text for all phy's and should speak to the MAC layer primitives in the same way	
11.0	bdobyns	E	Add an introductory section to DSSS PHY similar to 12.0, page 282	
11.1, 11.4, 2.9, also 10.1, 10.5, and 12.2	Fischer, Mike.	T	The reference model in figure 2Ð11 should be replaced with one that matches the remainder of the standard. A recommended replacement drawing appears in document 95/16. To the extent that it makes editorial sense to include reference model drawings in subsequent (e.g. PHY) chapters, those drawings should be copies of, or subsets of, the drawing in section 2.9.	There should be a consistent reference model for all sections of the specification, and for all PHYs; otherwise the concept of a reference model is of dubious value. The existing drawings in 4 chapters are all different, and none fully match the description of the MAC and PHY elsewhere in this document.
11.1.1	Bob O'Hara	E	replace "document" with "section", "by" with "to", "for" with "by", "characteristics of" with "characteristics"	
11.1.1	Greg Ennis	E	paragraph 1: remove "MAC"	this section does not describe the MAC
11.1.1	Mahany	E	Replace "Nodes" with "Stations"	Term Node not in earlier definitions.
11.1.1	Greg Ennis	T	paragraph a): change MPDU to PSDU (PHY Service Data Unit)	strictly speaking, the PHY knows nothing of MPDUs, only what the MAC passes to it, which I believe is a PHY Service Data Unit
11.1.2, 11.1.3, 11.1.4, 11.1.5	Fischer, Mike.	E	these should be merged into the relevant portions of section 1	consistency
11.1.2, 2.9, 10.1.2, 12.3.1	Isabel Lin	E	Make them consistent.	The Reference Models in those sections are not consistent. What needs to be done: Make them consistent.
11.1.2.2	Greg Ennis	E	add "are used" to end of last sentence.	Incomplete sentence.
11.1.2.2	Wim Diepstraten	E	Replace "transmission" by "means" or "facility".	
11.1.3	Bob O'Hara	E	delete this section, it is empty	
11.1.3	Greg Ennis	E	need this section filled in.	no definitions have been included

11.1.4	Mahany	E	Replace BPDU with PDU	Term BPDU not consistent with vocabulary elsewhere in standard..
11.1.4	Renfro	E		MAC defined DS to be Distribution System.
11.1.4	Bob O'Hara	T	"PN is not defined"	all acronyms must be defined
11.1.5	Bob O'Hara	E	add "a" between "of" and "layer"	
11.1.5	Greg Ennis	E	paragraph 2: replace "of layer" with "of a layer"	need indefinite article
11.2	Tom T.	E	Correct References to PLCP preamble and Figure 11-2 to show PLCP Preamble consists of Sync bits and Unique Word. Add reference to PLCP Header consisting of signal bits, Length and CRC 16.	This will make this consistant with FH and IR PHYs.
11.2.1	Bob O'Hara	E	replace "appended" with "prepended"	
11.2.1	Greg Ennis	E	replace "appended" with "prepended"	PLCP header is put on at the beginning
11.2.1	Greg Ennis	T	replace BPDU with PPDU and MPDU with PSDU	I believe the correct terms should be PHY Protocol Data Unit and PHY Service Data Unit
11.2.2	Bob O'Hara	E	replace "MPDU" with "MPDU (PSDU)"	
11.2.2	Greg Ennis	E	field names in figure should be capitalized	tradition
11.2.2	Greg Ennis	T	replace BPDU with PPDU and MPDU with PSDU	I believe the correct terms should be PHY Protocol Data Unit and PHY Service Data Unit
11.2.3.1	Bob O'Hara	E	replace "consists" with "shall consist", "receive" with "receiver"	
11.2.3.1	Geiger	E	Receive s/b receiver	Spelling
11.2.3.2	Bob O'Hara	E	replace "consist" with "shall consist"	
11.2.3.3	Bob O'Hara	T	definition and examples must match	this field contains a value, it is not a bit field
11.2.3.3	Jeff Rackowitz	T	Eliminate This Paragraph and the Signal Field from Figure 11-2.	I don't see the need to implement the gear shifting in the 802.11 system. I realize that the PAR requires interoperability but we have taken it too far. IR PHYs do not interoperate with radio PHYs and DS PHYs don't interoperate with FH PHYs so why should we require PHYs that operate at various rates to interoperate. The PAR states, "The standard will include support of the following: ...Stations which interoperate in both BSA and ESA shall be defined if feasible." I feel that we have more than sufficiently satisfied this requirement if PHYs at common bit rates interoperate and managing this will not be difficult. I see no problem defining DS or FH PHYs that operate at 1 and 2 Mbps but gear shifting is an unnecessary complication for a base standard.
11.2.3.4	Bob O'Hara	T	"left most" must be replaced with better usage	ambiguous, MSB? LSB?
11.2.3.5	Bob O'Hara	E	replace "[2048 data ... over head]" with "2336", "which" with "that", "MPDU" with "PSDU"	
11.2.3.5	Greg Ennis	E	replace "[2048 ... head]" with "maxPSDUsize"	should not reference numbers in this section
11.2.3.5	Wim Diepstraten	E	Suggest to specify 2304 instead of the 2048.	This is the maximum size of the MSDU, which after adding the MAC Header and CRC (and IV and ICV), is the maximum size that a PHY will ever have to handle.
11.2.3.5	Fischer, Mike.	T	A statement like Ò2048 data payload octets + the octets for MAC overheadÓ has no place in a PHY length specification. If the limit is 2048, say so. If the limit is 2346 octets (30 maximum MAC header length) + (4 WEP IV) + (2304 maximum MSDU length) + (4 WEP ICV) + (4 MAC CRC), say so. Either way, keep the MAC overheads out of this.	Proper layering, clear specification of PHY length limitations (since as this reads the MPDU could be arbitrarily long provided the extra length is in the MAC overhead rather than the MSDU payload).
11.2.3.5	Tom T.	T	Change first sentence to: 'The PLCP length field is an unsigned 16 bit integer which indicates the number of octets (1 to a maximum of 2500) to be transmitte in the MPDU.	The 2500 size was obtained from the IR section and makes sense if you really want a user payload of 2048. (Not including IP and Trasport headers).
11.2.3.6	Bob O'Hara	E	replace "field" with "fields", "module" with "modulo"	
11.2.3.6	Greg Ennis	E	replace "compliment" with "complement"	misspelling

11.2.3.6	Tom T.	E	Add line stating: FCS shall be transmitted with the coefficent of the highest term first.	Just makes it clearer. (Also FH and DS shuld be the same.)
11.2.3.6, also 12.2.4.6, and 10.3.2.2.3	Fischer, Mike.	T	The CRC polynomial does not match its name. The listed polynomial is ÒCRCÐCCITT.Ó There is a polynomial named ÒCRCÐ16Ó but its polynomial is (X^16)+(X^15)+(X^2)+1. Either of these polynomials is acceptable for PLCP header checking, but the name and the polynomial should be consistent (and uniform across all of these PHYs). Please choose 1. The description of the algorithm in 10.3.2.2.3 is the clearest, and should be replicated for all of the other HEC sections (or adapted for all if the CRCÐ16 polynomial is desired and the error was in the polynomial rather than the name of the polynomial).	consistency, technical correctness
11.2.4	Renfro	E	Delete "requires" from second sentence. Z^{-1} is more typically used for delays than x^{-1}.	
11.2.4	Bob O'Hara	T	descriptions of scramblers must match between PHYs when the algorithm is the same.	leads to confusion
11.2.4	Greg Ennis	T	replace "all data" with "all bits"	"data" is ambiguous
11.2.4	Jeff Rackowitz	T	Eliminate this paragraph.	There is no reason to require a data scrambler using Direct Sequence with differentially encoded data. If this must be a required implementation, it would be highly desireable to implement some sort of security scrambling similar to DES. This could be accomplished by loading a register with a standard value for compatibility and with another value for an encryption key.
11.2.5	Bob O'Hara	E	replace "MPDU" with "PSDU"	
11.2.6	Bob O'Hara	E	replace "if" with "in", "commands" with "service primitives", "initiate" with "initiated", "are" with "shall be", "will" with "shall", "is"with "shall be", "MPDU" with "PSDU", "form" with "from", "packet" with "frame", "enters" with "shall enter"	
11.2.6	Greg Ennis	E	2nd paragraph: replace "initiate" by "initiated"	editorial
11.2.6	Wim Diepstraten	E T E	Given that the PLCP Header is generated by the PLCP layer, I suggest to update Fig 11-5 such that it shows that PMD_DATA.req primitives are also generated during the PLCP Preamble and Header. This comment also applies to figure 11-6 and 11-8, which would be correct to describe the MAC to PLCP interface on a per octet basis, but does not correctly show the symbol by symbol generation (and interpretation) of the PLCP Preamble and Header. Shouldn't a "postamble" be specified, to assure that the last bit is transmitted without any negative effect of the Tx-Turnoff actions? Figure 11-6 specifies that the Initialize State does issue two PMD_TxPWRLVL.req primitives. Suggest to delete one.	The description is currently inconsistent in describing the functionality of the PLCP and PMD layer, and its interface functions. It is unclear why two requests are needed.
11.2.6 (Figure 11-6)	Bob O'Hara	E	replace "decriment" with "decrement"	
11.2.6/7	Jan Boer	E	Change PHY-DAT... primitives to bring it in line with chapter 11.4 (PMD_DATA...) Harmonize other terminology e.g. TXPWR_LEVEL->PMD_TXPWRLVL	Terminology is inconsistemt
11.2.7	Bob O'Hara	E	delete first paragraph	
11.2.7	Bob O'Hara	E	replace "must" with "shall", "quality," with "quality),", "and PMD_CS will" with "PMD_CS shall", "is" with "shall be", "will" with "shall", "includes" with "shall include", "MPDU" with PSDU"	

11.2.7	Wim Diepstraten	E T E	Third paragpraph: Suggest to change "PHY entity" into "PLCP entity". Third paragraph suggests that there should be a match for the 802.11 signal and Service fields, otherwise a PHY_DATA.indicate(END-OF-DATA) will be issue'd, and the PHY **receiver will be reset**. The receiver should however not reset completely. The PLCP should still countdown the received "Length" field value by the amount indicated in the "Signalling Rate" field, and report CCA Busy to the MAC, (assuming that the PLCP CRC was correct). This comment also applies to Figure 11-8. - The "PLCP Field Out of Spec" condition should be deleted. - The Setup MPDU RX state should specify a "bits per symbol" decrement value for the PMD. Figure 11-7 has similar problems as figure 11-5: - There would also be PMD_DATA.ind arrows during the PLCP Header. - Delete some of the PHY_DATA.ind(DATA) arrows, to show that the rate of indications are less frequent (per octet) then the PMD_DATA.ind arrows, which are per symbol. - Change "Scramble" into "Descramble". - Suggest to use SFD instead of "Unique Word".	 The PLCP should still countdown the Length, to assure coexistance with future higher speed devices. To do that it should interpret the "Signalling Rate" field according to the specification given. There are a number of inconsistencies between the drawings, Sate Machines, and describing text regarding the function distribution between the PLCP and the PMD.
11.2.7, 10.2.3.1, 12.2.5.2	Fischer, Mike.	T MAJOR ISSUE	It is imperative that all PHYs explicitly constrain the length reported in the RXVECTOR of the PHY_DATA.indicate(Start_of_Data) to equal the length sent from MAC to PHY in the TXVECTOR of the PHY_DATA.request(Start_of_Data) at the peer PHY entity that placed the PhPDU onto the WM. This needs to be true even if the unification of TXVECTOR and RXVECTOR formats and encodings recommended in another of my comments is not adopted.	If the receiving MAC cannot rely upon the length indicated in the RXVECTOR to be an accurate copy of the MPDU length from the peer MAC entity, the entire fragmentation/reassembly model needs to be reexamined. The absence of a fragment length field in the MAC header has been discussed extensively, both regarding fragmentation and regarding WEP (especially WEP, which applies to MSDUs, in conjunction with fragmentation, which generates MPDUs after WEP has encrypted the MSDU). In several of these discussions, the ability to omit this fragment length indication was justified on the basis of this property of the length indication from the RXVECTOR ĐĐ but the current PHY drafts do not explicitly require that this property is true. Note that if this property can be relied upon (in cases that the HEC is valid on reception), the use of the PLCP length reported in the RXVECTOR is superior to a length field in the MAC header, because a MAC implementation may use the length from the RXVECTOR as a validated (rather than speculative) quantity prior to receipt and validation of the CRC at the end of the MAC frame.
11.2.7.1 (Figure 11-8)	Bob O'Hara	E	replace "decriment" with "decrement"	
11.3.1	Wim Diepstraten	T	The DS PHY should specify the necessary primitives to provide a PowerUp/Down function, with an indication after power up when the PHY is fully operational.	
11.3.3.1.1 thru 11.3.3.2.2	Bob O'Hara	E	add "." to the end of most paragraphs	
11.3.4	Bob O'Hara	E	replace "form" with "from"	
11.3.4	Wim Diepstraten	E	It is unclear from the DS PHY MIB which parameters are mandatory, and which are optional. Further it is suggested that the DS PHY MIB description will be done using the same general format as is given for the MAC and FH PHY.	
11.3.4	Bob O'Hara	T	Define MIB	definition required
11.3.4	Mahany	T	Add Full MIB Definitions Per 9.1	Omission
11.4.2	Bob O'Hara	E	replace "transmitted" with "transmitted into"	
11.4.3	Bob O'Hara	E	replace "per-to-per" with "peer-to-peer"	
11.4.3	Wim Diepstraten	E	bullet item a correct "peer-to-peer".	

11.4.4.2 & 11.4.4.3 11.4.5.7 till 11.4.5.8.4	Wim Diepstraten	T	Delete the PMD_RATE.indicate in the tables 11-3 and 11-4. Delete the PMD_RATE.indicate description in 11.4.8. Change 11.4.5.7.2, 11.4.5.7.3 and 11.4.7.4 such that it applies to both the transmit and receiver operation, where the PMD_RATE.request is generated such that the new rate takes effect immediately following the PLCP Header generation or reception.	According to the model, the PLCP layer does handle the PLCP preamble and PLCP Header. So the PLCP layer will generate the PMD_RATE.request, both in the transmitter, aswell as in the receiver, where it does that based on the interpretation of the PLCP Header information, as long as the CRC is correct.
11.4.5.1.2	Bob O'Hara	E	replace "for modulation" with "for QPSK modulation", "single symbol of data bit" with "single data symbol"	
11.4.5.10.1	Bob O'Hara	E	replace "provides" with "shall provide"	
11.4.5.10.3	Bob O'Hara	E	replace "is" with "shall be"	
11.4.5.10.4	Bob O'Hara	E	replace "CS.in" with "CS.indicate"	
11.4.5.11	Bob O'Hara	E	replace "indicates" with "shall indicate"	
11.4.5.11.4	Wim Diepstraten	E	The text refers to a PHY_CS.indicator, whereas this primitive is not described in the MAC/PHY interface section.	It is unclear how and when the PMD_CS.indication will be reported to the MAC.
11.4.5.12.4	Wim Diepstraten	E	The text refers to a PHY_ED.indicator, whereas this primitive is not described in the MAC/PHY interface section.	
11.4.5.2.3	Bob O'Hara	E	replace "by" with "when	
11.4.5.2.4	Bob O'Hara	E	replace "MPDU" with "PSDU"	
11.4.5.3	Bob O'Hara	E	replace "PHY_TXE.indicate" with "PMD_TXE.request"	
11.4.5.3	Wim Diepstraten	E	change PHY_TXE.indicate into PHY_TXE.request.	
11.4.5.4.1	Wim Diepstraten	E	It is unclear whether the PMD_ANTSEL.request is affecting also the receiver antenna selection. It is further unclear, what the relation of this request is to the ANTSEL parameter in the TX_Vector.	
11.4.5.4.2	Bob O'Hara	E	replace "antennas" with "antennae", "antenna is" with "antennae is"	
11.4.5.4.3	Bob O'Hara	E	replace "can" with "may"	
11.4.5.5.2	Bob O'Hara	E	replace "provide antennas should" with "shall"	
11.4.5.5.2 11.4.5.5.4	Wim Diepstraten	E	Delete "provide antennas" from the first sentence of the description. Describe that the new TXPWR_LEVEL will take effect when PMD_TxE.request is asserted.	
11.4.5.5.3	Bob O'Hara	E	replace "is" with "shall be"	
11.4.5.7.2	Bob O'Hara	E	replace "MPDU" with "PDSU"	
11.4.5.7.3	Bob O'Hara	E	replace "MPDU" with "PDSU"	
11.4.5.7.4	Bob O'Hara	E	replace "selects" with "shall select", "will" with "shall"	
11.4.5.8.1	Bob O'Hara	E	replace "MPDU" with "PDSU"	
11.4.5.8.2	Bob O'Hara	E	replace "In the receive mode, the" with "the", "MPDU" with "PDSU"	
11.4.5.9.1	Bob O'Hara	E	replace ".." with "."	
11.4.5.9.3	Bob O'Hara	E	replace "is" with "shall be"	
11.4.6	Bob O'Hara	E	delete "compliant"	
11.4.6.	Wim Diepstraten	E	It should be clearly stated that the DS PHY PMD is specified such as to support the operating frequency ranges in the USA(what about Canada), Europe and Japan. It should be further specified that apart from compliance to the standard, vendors need to obtain type approval at the individual regulatory authorities.	
11.4.6.1	Bob O'Hara	E	replace "will" with "shall"	
11.4.6.10	Renfro	E		I would suggest that this spec say that the compatible unit will meet all requirements of this standard over the advertised operating environmental ranges.
11.4.6.2	Bob O'Hara	E	replace "are" with "shall be", "numbers a shown" with "numbers shall be as shown"	
11.4.6.2	Jeff Rackowitz	E	The chart is wrong... Frequencies should be in MHz not kHz	

11.4.6.2	Joe Kubler	E	table 11-5 shows frequencies in kHz and should be MHz (other wise we are talking about 2.4 MHz band and not 2.4 GHz band	
11.4.6.2	P Chadwick	Edit	In table 11-5, delete KHz, insert MHz	KHz wrong.
11.4.6.2	Wim Diepstraten	T	The channel grouping is not adequate for optimum medium sharing. To allow a better frequency plan more channels should be specified, that allows more separation between the channels of different groups. The proposal is to specify a raster of 5 MHZ from the frequency 2412 Khz and upward till 2462 Khz, or at least to specify two additional frequencies at 2427 and 2447 KHz. Plus of course the Japanese Frequency band.	The current specification allows only two channels operating simulataneously in the same environment, while the other channel groups are specified such that there is still a significant overlap in channel bandwidth between the groups. For optimum frequency planning the following combinations are important: 1a, and 1b could be combined with 3b if the cells are separated. An extra allocation of 2427 Khz would allow combination with the above 3, for a minimum overlap plan. The same applies to the combination of: 3a, and 3b with 1a, and an additional specification of 2447 KHz.
11.4.6.2 (Figure 11-5)	Bob O'Hara	T	Correct band is "MHz"	this PHY should be in the 2400 MHz ISM band
11.4.6.4	Bob O'Hara	E	replace "jw" with "$j\omega$", "Π" with "π"	
11.4.6.4	Renfro	E		Update Table references.
11.4.6.4	Wim Diepstraten	E	The text below the tables 11-6 and 11-7 should specify **1Mbps and 2 Mbps** respectively.	
11.4.6.5	Mahany	E	Replace ETS Res 02-09 with 113-328	Update
11.4.6.5	P Chadwick	Edit	For Europe, refer to ETS 300-328.	RES02-09 is a work programme number, which will be re-allocated to a different work programme.
11.4.6.6	Bob O'Hara	E	replace "as The time" with "as the time"	

11.4.6.6	Jeff Rackowitz	T	Turnaround time to 15-18uS. CCA time should be 40-50uS	While the RF hardware implementation for this is realizable, it would likely increase hardware cost for small gains in system performance. A figure of 15-18uS would be more practical for a variety of implementations. A power up time of 2 us is only 2 data bits at the 1 MBPS rate. Given a sync field of 128 bits per para. 11.2.3.2 and a worst case latency of 15 us per para. 11.4.8.4 these times do not appear to be that critical. Additionally, if overhead is a consideration, given the 192 bits in the PLCP field as shown in para. 11.2.3, and the 34 octets (272 bits) in the MAC frame (excluding data) as shown in para. 4.1.1, the 2 us ramp-up time is only 0.431% of the channel capacity at 1 MBPS (or 0.609% with a gear-shift to 2 MBPS after the PLCP) assuming back-to-back packets with no embedded data and no latency between packets. Since data will always be embedded in packets, and a latency of some finite time will always exist between the completion of one transmit frame and the next, increasing the power up/down ramps by even an order of magnitude should not have any significant impact on the channel capacity. Regarding the time from PMD_TXE from the TX state to the RX state as indicated by the CCA signal. With a data rate of 2MB, and 11 chips per bit, those of us implementing digital matched filters and or other forms of signal processing are VERY hard pressed to achieve this spec (<=25uS). It can theoretically be done, but leaves little or no room for error, we simply need more sampling time in out processors. A more reasonable value would be 40-50uS, so that the filters have chance to track more accurately.
11.4.6.6	Renfro	T		CCA signal being less than 25 usec doesn't make sense. Should define turnaround time at air interface.
11.4.6.6 11.4.6.7	Wim Diepstraten	T	The Transmit to receive (and Rx to TX) Turnaround Time is currently defined from the transition of the PMD_TXE. Question is whether this is an exposed signal, to allow conformance testing to this specification. Further it would be more relevant to specify this turnaround time from the MAC/PHY interface.	
11.4.6.7	Renfro	T		Should define turnaround time at air interface.
11.4.6.7	Tom T.	T	Add to second paragraph: and the propagation time giving a slot time of 25 µsec. (A distance of approximately 1 mile was used to calculate propagation time).	Propagation delay must be taken into account when calculating the slot time used by the backoff algorithm. The distance of one mile was fairly arbitrary however a cell size diameter exceeding 2 miles would seem to cease being called a Local Area Network.
11.4.6.8	Renfro	T	Delete	Stick to over the air compatibility issues.
11.4.6.9	Renfro	T	Delete	Stick to over the air compatibility issues.
11.4.7.1	Bob O'Hara	E	replace "Equivalent Radiated" with "Equivalent Isotropically Radiated"	
11.4.7.1	Jerry Loraine	E	Table refers to ETSI res 02-09, this is a technical committee not a specification. For European conformance, it needs to conform to document ETS 300-328.	
11.4.7.1	Renfro	E		Either add Japan here or delete elsewhere.
11.4.7.2	Jeff Rackowitz	T	Change as follows: The minimum transmitted power shall be no less than 1 to 10 mW.	There are no regulatory requirements giving a base output power and we have seen fairly good results with very low power radios.
11.4.7.3	Bob O'Hara	E	replace "must" with "shall"	

11.4.7.3	Jeff Rackowitz	T	Change as follows: Power control shall be provided for all transmitted power levels. At least 2 power levels shall be provided between Minimum Transmitted Power Level and 1000 mW....	Why is it 4 power levels, 2 would seem to be sufficient. Also, why only for transmitters >100mW? If a network is implemented with all 100mW radios, the associated problems do NOT disappear! We should control the 100mW radios also, say 100mW and 10mW modes.
11.4.7.4	Renfro	T		Delete reference to antenna port. Should not require that this be an exposed interface.
11.4.7.5 11.4.7.6	Wim Diepstraten	E	specify "+/- 25 ppm max." specify "better then +/- 25 ppm max"	
11.4.7.6	Bob O'Hara	T	awkward construction - correct	ambiguous
11.4.7.7	Bob O'Hara	E	replace "are" with "shall be"	
11.4.7.7	Wim Diepstraten	E	The Figures 11-11 and 11-12 are not in accordance with the specifications in section 11.4.6.6 and 7. Also only the relevant PMD_TXE transition should be shown.	The Figures show only the ramp, whereas there is also a Tx/Rx and Rx/Tx turnaround time component involved.
11.4.7.7	Jeff Rackowitz	T	... 10% to 90% of maximum power shall be no greater than 5 usec.	Transmit power on and power down ramp. This seems too tight. While this could be easily achieved under lab conditions, the real world applications may require more extensive filtering in transmit chain components, extending the power up/down times. A better value would be 5uS.
11.4.7.9	Bob O'Hara	E	replace "actual" with "the actual", "will" with "shall"	
11.4.7.9	Bob O'Hara	E	replace "are" with "shall be"	
11.4.7.9	Wim Diepstraten	T	It is not clear from the description whether the exposed chip clock is the Rx or Tx chip clock.	
11.4.8	Mahany	T	Restrict Inband Receiver Emissions (e.g. LO reradiation) to -50 dBm	Local oscillator leakage within the operating frequency range is a significant potential inteferer. Under FCC regulations, equipment can potentially be approved with RECEIVER emissions up to the 15.249 limits. Consider a direct conversion receiver with -20 dBm leakage. This will interfere will other receivers operating near sensitivity at distances in excess of 15 - 20 m. -Same comment at 10.6.5
11.4.8.1	Jan Boer	T	The Frame Error Rate (FER) shall be less than x ..... add at end: The test for the minimum input level sensitivity shall be conducted with the energy detection threshold set to - 80 dBm (see 1.4.8.4 a)	There is no exposed data line defined. BER can not be measured. The value of FER is related to the frame length and must be determined for a comparable BER as is now specified. All other references to BER in the document must be changed to FER. The addition makes the test condition for the sensitivity level more clear. It makes the question: should you be able to receive at -80dBm whwn the enrgy detection threshold is set to -70dBm obsolete
11.4.8.1 11.4.8.2	Wim Diepstraten	T	Suggest that the specification should be changed from BER to PER, at a maximum frame size specification.	Special provisions need to be build into each implementation to test for BER rather then PER. Further, PER numbers are more relevant for MAC level link quality criteria.
11.4.8.2	Bob O'Hara	E	superscript "-5"	

11.4.8.2	Jeff Rackowitz	T	... maximum input level of -10 dBm ...	Receiver Maximum input level. A max value of -4dBm is difficult and will add cost due to input intercept handling, or compromise performance of the receiver due to noise figure degradation. Assuming a transmitter power of 1W, and 2dBi antennas, this is around a 1.5- 2ft separation of radios. A value of -10dBm is more reasonable and corresponds to approximately 5ft of radio separation. For 100mW European radios, this is even more ridiculous. If the radios are that close, why use wireless?
11.4.8.4	Bob O'Hara	E	replace "will" with "shall"	
11.4.8.4	Jan Boer	T	add to 11.4.8.4.d (alinea on ED time): If Transmitter and Receiver are running in a slot synchronous situation with the slottime defined as in 11.4.8.6 ,conformance to ED time specification shall be proven if the CCA is reported at the end of a slot provided that the energy change accross the ED threshold is applied within 5 usec after the start of that slot.	If a receiver evaluates energy in a slotted situation,(i.e. in each slot a energy detection circuit is started which can report energy at the end of a slot,) then also the energy detect time must be evaluated in this situation. If for example energy is applied later than 5 usec after the start of a slot then the chance is there that no energy will be detected in the same slot, but one slot later (making the energy detect time, due to the measurement method, longer than a slottime).
11.4.8.4	Renfro	T		Requirement is too specific in implementation. Should only specify desired performance. (i.e., detect compliant signal within TBD usec, detect non-DS signal within TBD, ...) If you specify energy detection threshold as function of power level, you need to specify impact of antenna gain.
11.4.8.4	Wim Diepstraten	T	Text should be added to this section to describe the CCA (Busy) behaviour that needs to be assured, once a PLCP header with correct CRC, but with an unsupported rate is detected. The specification of the CCA indication should assure that the Busy indication is asserted for the duration specified by the length and signal rate fields of the PLCP header (so until length is counted to zero with a Rate/Symbol decrement value).	This specification is needed to assure coexistance with future higher speed PHY's in the same band.
111.4.5.12.1	Bob O'Hara	E	replace "indicates" with "shall indicate"	