

Wednesday, May 19, 1999 13:25:44

P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC P L # 2

Bob O'Hara

Comment Type T Comment Status A

SuggestedRemedy

Proposed Response Response Status C

ACCEPT.

CI XX SC P 17.3.10.2 L 22 # 69

Peter Ecclesine

Cisco Systems

Comment Type T Comment Status A

- 1 17.3.10.2 pe E no Mother document section 14.6.15.1 uses Frame Error Ratio to specify Receiver Sensitivity. Please change this clause to use FER.
- 2 17.3.10.3 pe E no Mother document section 14.6.15.1 uses Frame Error Ratio to specify Receiver Sensitivity. Please change this clause to use FER.
- 3 17.3.10.4 pe E no Mother document section 14.6.15.1 uses Frame Error Ratio to specify Receiver Sensitivity. Please change this clause to use FER.
- 4 OF5.1 pe E no Mother document section 14.6.15.1 uses Frame Error Ratio to specify Receiver Sensitivity. Please change this clause to use FER.

SuggestedRemedy

Proposed Response Response Status C

ACCEPT.  
All PER will be changed to FER to align to the current standard.

CI XX SC 0 P 1 L # 63

Valerie E. Zelenty

IEEE Standards Dept.

Comment Type E Comment Status D

Title is incorrect.

SuggestedRemedy

Match title to published 802.11-1997.  
You left out "LAN" after the word "Wireless" and also left out "Information technology."  
This is minor and can be corrected at time of publication by the IEEE editor.

Proposed Response Response Status W

Tabled  
Although the title needs to be changed as suggested to match to published 802.11-1997, the PAR says the title should be as shown in the draft D5.0. This issue needs to be treated by IEEE 802 editors.

CI XX SC 17.1 P 8 L 13 # 3

Bob O'Hara

Informed Technology,

Comment Type T Comment Status A

"should be" is not proper usage in a standard. Correct usage is either descriptive or normative.

SuggestedRemedy

If this is the statement of which rates are required, replace "should" with "shall". If this is merely descriptive as is appropriate for an introductory clause, replace "should be" with "are".

Proposed Response Response Status C

ACCEPT. Changed "All compliant implementations are capable of transmitting and receiving at data rate of 6, 12 and 24 Mbit/s." to "The support of transmitting and receiving at data rates of 6, 12 and 24 Mbit/s is mandatory."

Wednesday, May 19, 1999 13:25:45

P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC 17.1 P 8 L 8 # 5  
 Satoshi Obara Fujitsu  
 Comment Type E Comment Status A  
 "supplement" is wrong word.  
 SuggestedRemedy  
 "supplement" should be change "clause".  
 Proposed Response Response Status C  
 ACCEPT. Changed "supplement" to "clause"

CI XX SC 17.2.2 P 9 L 44 # 45  
 Bob O'Hara Informed Technology.  
 Comment Type E Comment Status A  
 wrong verb  
 SuggestedRemedy  
 replace "is" with "are"  
 Proposed Response Response Status C  
 ACCEPT. to be withdrawn  
 The verb has to be "is".  
 This comment was withdrawn.

CI XX SC 17.2.2 P 9 L 44 # 4  
 Bob O'Hara Informed Technology,  
 Comment Type E Comment Status R  
 Wrong verb  
 SuggestedRemedy  
 replace "is" with "are"  
 Proposed Response Response Status C  
 REJECT. The verb has to be "is".

CI XX SC 17.2.2 P 9 L 45 # 72  
 John Deane CSIRO Australia  
 Comment Type T Comment Status A  
 Instead of 'null bits' suggest 'reserved bits' as  
 described elsewhere.  
 SuggestedRemedy  
 ibid  
 Proposed Response Response Status C  
 ACCEPT.  
 Reworded.

CI XX SC 17.2.2 P 9 L 45 # 46  
 Bob O'Hara Informed Technology,  
 Comment Type T Comment Status A  
 The description in the value column does not agree with the text in  
 clause 17.2.2.3  
 SuggestedRemedy  
 Correct the table or the text in 17.2.2.3 to agree.  
 Proposed Response Response Status C  
 ACCEPT.  
 Changed the text of subclause 17.2.2.3 as follows:  
 "The SERVICE parameter consists of 9 bits reserved for future use."  
 to:  
 "The SERVICE parameter consists of 7 null bits used for the scrambler initialization and 9  
 null bits reserved for future use."

Wednesday, May 19, 1999 13:25:45

## P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC 17.2.3 P 10 L various # 47

Bob O'Hara Informed Technology,

Comment Type T Comment Status A

Table 77 list four parameters of the RXVECTOR. Yet, only two parameters are described in the subclauses.

*SuggestedRemedy*

Add descriptive subclauses for the missing two parameters.

Proposed Response Response Status C

ACCEPT.  
The following two subclauses were added:

17.2.3.3 DATARATE

DATARATE shall represent the data rate at which the current PPDU was received. The allowed values of the DATARATE are 6, 9, 12, 18, 24, 36, 48 or 54.

17.2.3.4 SERVICE

The SERVICE field shall be null.

CI XX SC 17.3.11 P 37 L 9 # 71

John Deane CSIRO Australia

Comment Type E Comment Status A

The first sentence 'Based on ... CCA.indicate.' does not make sense.

*SuggestedRemedy*

Could it just be deleted?

Proposed Response Response Status C

ACCEPT.  
The text was changed to:  
A clear channel shall be indicated by PHY-CCA.indicate (IDLE). The MAC considers this indication before issuing the PHY-TXSTART.request. Transmission of the PPDU shall be initiated after receiving the PHY-TXSTART.request (TXVECTOR) primitive. The TXVECTOR elements for the PHY-TXSTART.request are the PLCP header parameters DATARATE, SERVICE, LENGTH and the PMD parameter of TXPWR\_LEVEL.

CI XX SC 17.3.11 P 37 L 9 # 73

John Deane CSIRO Australia

Comment Type E Comment Status A

The first sentence 'Based on ... CCA.indicate.' does not make sense.

*SuggestedRemedy*

Could it just be deleted?

Proposed Response Response Status C

ACCEPT.  
ditto. (same as #71)

CI XX SC 17.3.12 P 40 L 30 # 6

Richard van Nee Lucent Technologies

Comment Type E Comment Status A

In 17.3.12, line 30, it is stated that 'if the PLCP header is successful, but the CRC is not valid...Also, in this case, the CCA shall indicate busy ...as indicated by the LENGTH field'  
First, there is no CRC anymore. Second, it does not seem to make much sense to use the LENGTH field when the header is wrong.

*SuggestedRemedy*

Replace 'but the CRC of the PLCP header is not valid' by 'but the parity check of the PLCP header fails'  
Remove the two last sentences 'Also, in this case ... Length field. The intended duration is indicated by the Length field.'

Proposed Response Response Status C

ACCEPT. Replaced "CRC" by "parity check".

The last sentence was removed. The sentence starats with "Also,," was moved to p. 42, l. 14.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line  
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

CI XX SC 17.3.12

Wednesday, May 19, 1999 13:25:45

**P802.11a Draft 5.0. Interim Comments and resolutions**

CI **XX** SC **17.3.12** P **42** L **5** # **74**

John Deane CSIRO Australia

Comment Type **T** Comment Status **A**

1. Cause of state transition RX IDLE to DETECT PLCP PREAMBLE not given. Presumably PMD-RSSI.ind above the threshold for preamble processing.
2. In DETECT PLCP PREAMBLE state the mechanism for 'wait for SIGNAL' is not clear. Presumably 'wait for PMD-data.ind'
3. Cause of transition from DETECT PLCP PREAMBLE back to IDLE is not clear. Presumably Timeout or PMD-RSSI.ind below threshold.
4. Same transition 'PHY\_CCA.ind(IDLE) is NOT a cause it is an action BY the PLCP to the MAC layer! So distinguish causes & actions.
5. State RXPLCP FIELDS cause for transition back to IDLE is unclear. Presumably PMD-RSSI.ind below threshold.
6. State RX SIGNAL PARITY cause for transition back to IDLE is PARITY FAIL or PMD-RSSI.ind below threshold and PHY\_CCA.ind(IDLE) is an action.
7. State RX SYMBOL exit conditions CCA(IDLE) & CCA(BUSY) are not defined. Possibly PMD-RSSI.ind below threshold.

*Suggested Remedy*

Included in the comment.

Proposed Response Response Status **C**

- ACCEPT.
1. Cause of state transition RX IDLE to DETECT PLCP PREAMBLE not given. Presumably PMD-RSSI.ind above the threshold for preamble processing. -> added "PHY-CCA.indicate (busy)"
  2. In DETECT PLCP PREAMBLE state the mechanism for 'wait for SIGNAL' is not clear. Presumably 'wait for PMD-data.ind' -> Changed the contents of the box. The labels of the conditions were changed as well. Please look up the figure.
  3. Cause of transition from DETECT PLCP PREAMBLE back to IDLE is not clear. Presumably Timeout or PMD-RSSI.ind below threshold.

-> The transition back to idle state can result either from absence of signal or from failure to receive and decode properly the SIGNAL field. See the corrected figure (Fig. 125).

4. Same transition 'PHY\_CCA.ind(IDLE) is NOT a cause it is an action BY the PLCP to the MAC layer! So distinguish causes & actions.

-> The IDLE indication is a signal which can be used to condition an action.

5. State RXPLCP FIELDS cause for transition back to IDLE is unclear. Presumably PMD-RSSI.ind below threshold. ? The IDLE indication is a signal which can be used to condition an action. This takes account of the case where signal is lost after successful decoding of the SIGNAL field.

6. State RX SIGNAL PARITY cause for transition back to IDLE is PARITY FAIL or PMD-RSSI.ind below threshold and PHY\_CCA.ind(IDLE) is an action.

-> The IDLE indication is a signal which can be used to condition an action.

7. State RX SYMBOL exit conditions CCA(IDLE) & CCA(BUSY) are not defined.

Possibly PMD-RSSI.ind below threshold.

-> They are "PHY\_CCA.ind(IDLE) and PHY\_CCA.ind(BUSY).

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line  
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

CI **XX** SC **17.3.12**

CI **XX** SC **17.3.2** P **11** L **18** # **7**

David Skellern Radiata Communicati

Comment Type **T** Comment Status **A**

Section 17.3.2 PLCP frame format  
The PLCP frame changed dramatically between Draft 2.0 and Draft 3.1.

Draft 2.0 defined the SIGNAL field as 2 short sequences each QPSK modulated by a pair of bits to convey the 4 bit RATE information. This system has the advantage that it is robust and the RATE information can be recovered from the receive PDU before demodulation and decoding of the PLCP header and MPDU has commenced.

In Draft 3.1 the SIGNAL field was re-defined as shown in Figure 107 of Draft 5.0. The rate information was moved into the PLCP header which is defined to be rate 1/2 BPSK coded OFDM. This scheme has a serious implementation problem. De-interleaving, demodulation, and decoding of the SERVICE field and PSDU (i.e. data portion of the packet) cannot commence until the RATE information has been extracted, as the information in this field (i.e. modulation type and FEC coding rate) affects the set-up of the de-interleaver, demodulator and Viterbi decoder. However the total latency through the de-interleaver, FFT, and Viterbi decoder will be of the order of 100 clock cycles, requiring buffering of the receive chain until the RATE information has successfully been extracted. A 100 deep I/Q FIFO is a significant overhead, and adds considerable complexity to the receive chain pipeline control. The previous system, where the RATE information was available immediately, was far superior from an implementation point of view.

*Suggested Remedy*

Persevering with the current system requires that the RATE information be moved to the start of the SIGNAL field. A lookup table based system could then be used to determine the modulation and coding rate without introducing significant latency into the receive chain.

Proposed Response Response Status **C**

ACCEPT.  
Changed the order of the field contents to "RATE, Reserved, LENGTH, Parity and TAIL"

Figure 107, 111, 122 and 124 were changed. Text that referred these figures was also changed.

CI **XX** SC **17.3.2** P **11** L **23** # **76**

John Deane CSIRO Australia

Comment Type **TR** Comment Status **D**

The PLCP frame changed dramatically between Draft 2.0 and Draft 3.1.

Draft 2.0 defined the SIGNAL field as 2 short sequences each QPSK modulated by a pair of bits to convey the 4 bit RATE information. This system has the advantage that it is robust and the RATE information can be recovered from the receive PDU before demodulation and decoding of the PLCP header and MPDU has commenced.

In Draft 3.1 the SIGNAL field was re-defined as shown in Figure 107 of Draft 5.0. The rate information was moved into the PLCP header which is defined to be rate 1/2 BPSK coded OFDM. This scheme has a serious implementation problem. De-interleaving, demodulation, and decoding of the SERVICE field and PSDU (i.e. data portion of the packet) cannot commence until the RATE information has been extracted, as the information in this field (i.e. modulation type and FEC coding rate) affects the set-up of the de-interleaver, demodulator and Viterbi decoder. However the total latency through the de-interleaver, FFT, and Viterbi decoder will be of the order of 100 clock cycles, requiring buffering of the receive chain until the RATE information has successfully been extracted. A 100 deep I/Q FIFO is a significant overhead, and adds considerable complexity to the receive chain pipeline control. The previous system, where the RATE information was available immediately, was far superior from an implementation point of view.

*Suggested Remedy*

Persevering with the current system requires that the RATE information be moved to the start of the SIGNAL field. A lookup table based system could then be used to determine the modulation and coding rate without introducing significant latency into the receive chain.

Proposed Response Response Status **W**

Same as #75 except comment type. Tabled by Editor.

Wednesday, May 19, 1999 13:25:46

P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC 17.3.2 P 11 L 23 # 75  
 John Deane CSIRO Australia

Comment Type T Comment Status D

The PLCP frame changed dramatically between Draft 2.0 and Draft 3.1.

Draft 2.0 defined the SIGNAL field as 2 short sequences each QPSK modulated by a pair of bits to convey the 4 bit RATE information. This system has the advantage that it is robust and the RATE information can be recovered from the receive PDU before demodulation and decoding of the PLCP header and MPDU has commenced.

In Draft 3.1 the SIGNAL field was re-defined as shown in Figure 107 of Draft 5.0. The rate information was moved into the PLCP header which is defined to be rate 1/2 BPSK coded OFDM. This scheme has a serious implementation problem. De-interleaving, demodulation, and decoding of the SERVICE field and PSDU (i.e. data portion of the packet) cannot commence until the RATE information has been extracted, as the information in this field (i.e. modulation type and FEC coding rate) affects the set-up of the de-interleaver, demodulator and Viterbi decoder. However the total latency through the de-interleaver, FFT, and Viterbi decoder will be of the order of 100 clock cycles, requiring buffering of the receive chain until the RATE information has successfully been extracted. A 100 deep I/Q FIFO is a significant overhead, and adds considerable complexity to the receive chain pipeline control. The previous system, where the RATE information was available immediately, was far superior from an implementation point of view.

SuggestedRemedy

Solution:  
 Persevering with the current system requires that the RATE information be moved to the start of the SIGNAL field. A lookup table based system could then be used to determine the modulation and coding rate without introducing significant latency into the receive chain.

Proposed Response Response Status W

Tabled by Editor.  
 This comment had not been submitted by the last interim meeting. This comment shall be discussed in TGa and WG.

CI XX SC 17.3.2 P 11 L 28 # 70  
 Mark Webster Harris Semiconductor

Comment Type E Comment Status A

The sentence wording is confusing where it says, "the contents of the RATE and LENGTH enables to augment . . ."

SuggestedRemedy

Reword.

Proposed Response Response Status C

ACCEPT.  
 The text was reworded:  
 "The RATE and the LENGTH are required for decoding the DATA part of the packet. In addition, the CCA mechanism can be augmented by predicting the duration of the packet from the contents of the RATE and the LENGTH fields,"

CI XX SC 17.3.2 P 11 L 35 - 50 # 8  
 Kazuhiro Okanoue NEC Corp.

Comment Type T Comment Status A

In the figure 107, LENGTH field is located at the first field of PLCP header. Considering receiving procedure, it is important for a receiver to adjust its configuration to modulation method in the following OFDM symbols as soon as possible. Therefore, I think it is better to replace the LENGTH field and the RATE field in PLCP header.

SuggestedRemedy

Replace the LENGTH field and the RATE field in PLCP header.

Proposed Response Response Status C

ACCEPT.  
 Changed the order of the field contents to "RATE, Reserved, LENGTH, Parity and TAIL"

Figure 107, 111, 122 and 124 were changed. Text that referred these figures was also changed.

Wednesday, May 19, 1999 13:25:46

P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC 17.3.2.1 P 11 L 16 # 9  
 Bob O'Hara Informed Technology,  
 Comment Type E Comment Status A  
 missing "the" between "follows" and "steps"  
 SuggestedRemedy  
 insert "the"  
 Proposed Response Response Status C  
 ACCEPT.  
 Changed as suggested.

CI XX SC 17.3.2.1 P 11 L 24 # 10  
 Bob O'Hara Informed Technology,  
 Comment Type T Comment Status A  
 The PHY does not know the content of the PSDU and, thus, can not know there is a CRC-32 as part of the PSDU.  
 SuggestedRemedy  
 Delete the parenthetical clause.  
 Proposed Response Response Status C  
 ACCEPT.  
 Deleted as suggested.

CI XX SC 17.3.2.1 P 11 L 8 # 11  
 Bob O'Hara Informed Technology,  
 Comment Type E Comment Status A  
 The wording of "with a Guard Interval in front" is confusing. In front of what?  
 SuggestedRemedy  
 Reword the sentence using "sparated from the short training sequence by a Guard Interval".  
 Proposed Response Response Status C  
 ACCEPT.  
 Changed ", two repetitions of a "long training sequence" with a Guard Interval in front" to "and of two repetitions of a "long training sequence", preceded by a Guard Interval"

CI XX SC 17.3.2.1 P 12 L 51 # 12  
 Bob O'Hara Informed Technology.  
 Comment Type E Comment Status A  
 Each of the other items in this list refers to a subclause for the technical detail summarized by each list item. Item 10 does not include such a reference.  
 SuggestedRemedy  
 Include the appropriate reference for technical detail in item 10.  
 Proposed Response Response Status C  
 ACCEPT.  
 Added "Refer to clause 17.3.5.9 for details". This clause specifies the OFDM modulation in detail.

CI XX SC 17.3.2.2 P 13 L various # 13  
 Bob O'Hara Informed Technology,  
 Comment Type T Comment Status A  
 Is the content of Table 78 normative? If so, then there needs to be a "shall" statement in this clause. If not, is there a normative statement that states, for example, that "when transmitting at 6 Mb/s, the modulation used shall be BPSK" for each of the items in the table?  
 SuggestedRemedy  
 Make the table normative.  
 Proposed Response Response Status C  
 ACCEPT.  
 Changed the text to "The modulation parameters dependent on the data rate used shall be set according to the contents of Table 78."

CI XX SC 17.3.2.4 P 13 L 51 # 14  
 Bob O'Hara Informed Technology,  
 Comment Type E Comment Status A  
 Missing a word.  
 SuggestedRemedy  
 Insert "a" between "of" and "complex".  
 Proposed Response Response Status C  
 ACCEPT.  
 Changed as suggested.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line  
 RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

CI XX SC 17.3.2.4

Wednesday, May 19, 1999 13:25:47

P802.11a Draft 5.0. Interim Comments and resolutions

CI **XX** SC **17.3.2.4** P **14** L **50** # **77**  
 John Deane CSIRO Australia  
 Comment Type **E** Comment Status **A**  
 Two cases of wT(t) where 'T' should be subscript.  
 SuggestedRemedy  
 ibid  
 Proposed Response Response Status **C**  
 ACCEPT.  
 Changed as suggested.

CI **XX** SC **17.3.2.4** P **15** L **21** # **15**  
 Vic Hayes Lucent Technologies  
 Comment Type **E** Comment Status **A**  
 symbol "nsec" is NOT an SI symbol.  
 SuggestedRemedy  
 Change "nsec" into "ns"  
 Proposed Response Response Status **C**  
 ACCEPT.  
 Changed "nsec" to "ns".

CI **XX** SC **17.3.2.5** P **16** L **6** # **16**  
 Vic Hayes Lucent Technologies  
 Comment Type **E** Comment Status **A**  
 symbols "[micro]sec" and "nsec" are NOT SI symbols.  
 SuggestedRemedy  
 Change "...sec" into "...s"  
 Proposed Response Response Status **C**  
 ACCEPT.  
 Changed all "nsec" and "[micro]sec" to "ns" and "[micro]s".

CI **XX** SC **17.3.3** P **16 & 17** L **N/A** # **17**  
 Mark Webster Harris Semiconductor  
 Comment Type **T** Comment Status **R**  
 The current short-sync (t1-t10) does not seem to have a clear, unambiguous, end-of-pattern demarcation.  
 The receiver may not be detect all 10 short-sync patterns due to (1) AGC pull-in and ADC clipping , or (2) antenna diversity ping-pong with switching transients. Consequently, the receiver may be uncertain as to when the start of long-sync occurs. The loss-of-energy in the short-sync correlator when T1 onsets is not a strong indicator.  
 SuggestedRemedy  
 Possibly a clear end-of-pattern can be made for short sync (t1-t10) by phase inverting the last sync repetition (t10).  
 Proposed Response Response Status **C**  
 REJECT.  
 Relying on an inverted t10 to detect the end of the short training sequence will require the decision about the better antenna to be performed about 3 microseconds earlier and this will not leave enough time for scanning both antennas. See document 99/124 for details. For this reason, we're declining this recommendation.

Wednesday, May 19, 1999 13:25:47

P802.11a Draft 5.0. Interim Comments and resolutions

CI **XX** SC **17.3.3** P **16 and 17** L **N/A** # **18**  
 Mark Webster Harris Semiconductor  
 Comment Type **T** Comment Status **R**

The 5 GHz standard should be capable of supporting antenna diversity. It is not clear that it can do so. I could not find any IEEE802.11 submissions adequately justifying the current short-sync (t1-t10) specification. (I apologize if an oversight has occurred on my part.)

The short sync portion of the PLCP lasts only 8 usec. This transient a sequence seems highly aggressive if antenna diversity is desired. Antenna diversity is a feature which most manufacturers/suppliers/end-users demand. Antenna diversity is needed to combat log-normal fading and flat Rayleigh fading. The requisite higher-SNR's needed to support very high data rates (up 54 Mbps) seems to make antenna diversity an even more important requirement. Note, the PSDU data-rate is not known until the SIGNAL field, long after a diversity decision must be made.

During the short-sync timeframe it seems necessary to

- (1) Ping-pong between two antennas looking for sync/CCA, since one antenna may be in a faded condition.
- (2) On signal onset, pull-in an AGC on antenna A
- (3) Detect the sync pattern
- (4) Evaluate a diversity metric on antenna A
- (5) Switch antennas from A to B and let transients settle on antenna B
- (6) Pull-in an AGC on antenna B
- (7) Evaluate a diversity metric on antenna B
- (4) Switch back to antenna A if it is superior and let transients settle
- (5) Coarse frequency offset estimate
- (6) Set-up for long-sync (T1 and T2)

Some of these tasks can be performed in parallel. The nonlinear (clipping) effects caused by the ADC and the nonlinear signal modulation by the AGC during pull-in may force certain steps to be made sequentially.

In general, a diversity metric may monitor SNR (and SIR) and the degree of multipath on the two antennas. At relatively low SNR's (SIR's), the antenna can be chosen with the best SNR. At relatively higher SNR's, the antenna can be chosen with the smallest multipath measure. To measure multipath, the multipath spread must be measured using the short-sync correlation output on each antenna.

If the antennas are ping-pong'd (switched back and forth) looking for signal, say every 4 usec, until a acquisition hit is made, one or more short sync's may be lost (e.g., t1 thru t3).

*SuggestedRemedy*

Please produce a IEEE802.11a submission which justifies the current short sync timeline. Since this can vary greatly from implementation-to-implementation, it is only necessary to describe a typical timeline.

*Proposed Response* Response Status **C**

REJECT.

Document 99/124 provides a description of one possible time line which achieves the goal of selecting better antenna within 8 microseconds. The issue whether 8 microseconds are enough not to cause a significant degradation is currently being further investigated.

The primary goal of reliable operation with one antenna is met by the 8 microsec short training sequence. We have outlined a timeline (see doc 99/124) which shows that with an ambitious (by today's technology) implementation it is possible to implement antenna selection diversity with an 8 microsec preamble. This opinion was supported by an implementation experience of a similar system and simulation results presented for relevant scenarios. In addition, having a single antenna reception does not preclude implementing antenna diversity switching on a higher layer (not on a per packet basis). Given this data and the reluctance to impose a throughput penalty on all implementations, we decided not to change the duration of the short training sequence from 8 microsec.

CI **XX** SC **17.3.3** P **17** L ? # **19**  
 Mark Webster Harris Semiconductor

Comment Type **E** Comment Status **A**

Figure 110: Synchronize is misspelled as "synchronize."

*SuggestedRemedy*

Correct spelling.

*Proposed Response* Response Status **C**

ACCEPT.

Corrected as suggested.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line  
 RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

CI **XX** SC **17.3.3**



Wednesday, May 19, 1999 13:25:48

P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC 17.3.3 P 17 L 25-26 # 22

Vic Hayes Lucent Technologies

Comment Type T Comment Status A

Comment sponsored for ETSI Project BRAN:

We would like to replace the symbol S(-26, 26) in the PCLP preamble of the 802.11a draft standard (on the page 17, line 25/26) with one of the symbols we used in the preamble. It is firstly for more harmonization between two physical layers and secondly has technical benefits, because the Peak-to-Average Ratio (PAPR) and the Dynamic Range of the signal used in HL2 preamble is less than that used in 802.11a. it has a PAPR of 2.24 dB ( current symbol in Draft has a PAPR of 3.01 dB) and the dynamic range is 7.01 dB (the dynamic range of current symbol is 30.82 dB).

SuggestedRemedy

The new symbol should be

$$S(-26...26) = \sqrt{2} * \{0, 0, 1+j, 0, 0, 0, -1+j, 0, 0, 0, -1-j, 0, 0, 0, 1-j, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1-j, 0, 0, 0, -1-j, 0, 0, 0, 1-j, 0, 0, 0, -1+j, 0, 0, 0, 1+j, 0, 0\}$$

Proposed Response Response Status C

ACCEPT.  
Changed as suggested.

CI XX SC 17.3.3 P 17 L 39 # 23

Vic Hayes Lucent Technologies

Comment Type E Comment Status A

symbols "[micro]sec" are NOT SI symbols.

SuggestedRemedy

Change 3 times "...sec" into "...s"

Proposed Response Response Status C

ACCEPT.  
Corrected as suggested. Addition to that, three "nsec"s on p16, l6, p18, l3 and l4 were corrected. A "nsec" on p15 l21 was also corrected as "ns".

CI XX SC 17.3.3 P 17 L 44 # 26

MASAHIRO MORIKURA NTT

Comment Type T Comment Status D

17.3.3 PLCP preamble (SYNC)

Comment;  
The phase relation between short preamble (t1-t10) and long preamble (T1,T2) of draft 5.0 may cause degradation in timing detection. This is because the matched filter output for detecting the short preamble pattern has large sidelobe in boundary region between t10 and T1 due to the phase relation in D5.0. This large sidelobe badly affects the timing decision when multipath delayed signals are superimposed.

Recommendation;  
Change Eq.(8) so as to rotate the all signal phase +(3/4)pi  
 $L = \{-1+j, -1+j, +1-j, +1-j, -1+j, -1+j, +1-j, +1-j, \dots, -1+j, -1+j\} / \sqrt{2.0}$

SuggestedRemedy

Proposed Response Response Status W

Temporary tabled.

CI XX SC 17.3.3 P 17 L 44 # 25

MASAHIRO MORIKURA NTT

Comment Type T Comment Status R

The phase relation between short preamble (t1-t10) and long preamble (T1,T2) of draft 5.0 may cause degradation in timing detection. This is because the matched filter output for detecting the short preamble pattern has large sidelobe in boundary region between t10 and T1 due to the phase relation in D5.0. This large sidelobe badly affects the timing decision when multipath delayed signals are superimposed.

SuggestedRemedy

Change Eq.(8) so as to rotate the all signal phase +(3/4)pi  
 $L = \{-1+j, -1+j, +1-j, +1-j, -1+j, -1+j, +1-j, +1-j, \dots, -1+j, -1+j\} / \sqrt{2.0}$

Proposed Response Response Status C

REJECT.  
The short training sequence was changed to a different one due to another advantages which it provided. With the new short training sequence no phase rotation was found to give a markedly superior performance as compared with the situation without the phase rotation. Due to this, we decided not to apply the phase rotation method to the new short training sequence.

Wednesday, May 19, 1999 13:25:48

P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC 17.3.3 P 17 L 44 # 24

MASAHIRO MORIKURA

NTT

Comment Type T Comment Status D

Comment;  
The phase relation between short preamble (t1-t10) and long preamble (T1,T2) of draft 5.0 may cause degradation in timing detection. This is because the matched filter output for detecting the short preamble pattern has large sidelobe in boundary region between t10 and T1 due to the phase relation in D5.0. This large sidelobe badly affects the timing decision when multipath delayed signals are superimposed.

SuggestedRemedy

Change Eq.(8) so as to rotate the all signal phase  $+(3/4)\pi$   
 $L=(-1+j, -1+j, +1-j, +1-j, -1+j, -1+j, +1-j, -1+j, \dots, -1+j, -1+j)/\sqrt{2.0}$

Proposed Response Response Status W

Temporary tabled.

Will be submitted to BRAN and be compared/ with their original proposal. The meeting will be held in two weeks.

CI XX SC 17.3.4 P 18 L 20 # 27

Bob O'Hara

Informed Technology,

Comment Type E Comment Status A

Figure reference is not correct.

SuggestedRemedy

Replace "112" with "111".

Proposed Response Response Status C

ACCEPT.  
Changed as suggested.

CI XX SC 17.3.4 P 18 L various # 28

Bob O'Hara

Informed Technology,

Comment Type T Comment Status A

There is no normative requirement in this clause.

SuggestedRemedy

Put some "shalls" in here.

Proposed Response Response Status C

ACCEPT.  
Five "shalls" were added.

CI XX SC 17.3.4.3 P 19 L 1 # 29

Bob O'Hara

Informed Technology,

Comment Type E Comment Status A

Table 80: Isn't there much more information in this table than is necessary?

SuggestedRemedy

Make this table only two columns and include in column 1 the rate and in column 2 the coding for the rate. Eliminate all extraneous information from the table.

Proposed Response Response Status C

ACCEPT.  
All items are deleted except a column of the rate and a column of the coding for the rate. Eliminated all extraneous information from the table.

CI XX SC 17.3.5.1 P 19 L 45 # 30

Bob O'Hara

Informed Technology,

Comment Type E Comment Status A

The direction for order of transmission in figure 112 is opposite of that in figure 111. This may lead to confusion, even with the arrow indicating the proper direction.

SuggestedRemedy

Revise all figures showing transmission order to use the same direction, either left to right or right to left.

Proposed Response Response Status C

ACCEPT.  
Figure 111 was changed as well as the order of the SIGNAL field contents.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line  
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

CI XX SC 17.3.5.1

Wednesday, May 19, 1999 13:25:48

P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC 17.3.5.3 P L # 31  
 Bob Ward  
 Comment Type T Comment Status A  
 Padbits, equation 11.  
 SuggestedRemedy  
 An integer result must be achieved. Specify whether result should use the floor or the ceiling function  
 Proposed Response Response Status C  
 ACCEPT.  
 "Ceiling" function was introduced to make it clear.

CI XX SC 17.3.5.3 P 20 L 13 # 32  
 David Skellern Radiata Communicati  
 Comment Type E Comment Status A  
 Equation (11) is incorrectly written as  

$$N_{sym} = (16 + 8 * LENGTH + 6 + NDBPS - 1) / NDBPS$$
  
 It should in fact be the floor() if this value.  
 SuggestedRemedy  
 Change Equation 11 to be  

$$N_{sym} = \text{floor}((16 + 8 * LENGTH + 6 + NDBPS - 1) / NDBPS)$$
  
 Proposed Response Response Status C  
 ACCEPT.  
 Equation (11) was changed to:  

$$NSYM = \text{Ceiling}((16 + 8 * LENGTH + 6) / NDBPS)$$

CI XX SC 17.3.5.3 P 20 L 13 # 78  
 John Deane CSIRO Australia  
 Comment Type T Comment Status D  
 Equation 11 is not an integer.  
 SuggestedRemedy  
 Use  

$$N_{sym} = \text{floor}((16 + 8 * LENGTH + 6 + NDBPS - 1) / NDBPS) \quad (11)$$
  
 Proposed Response Response Status W  
 Tabled by Editor.  
 Since this had not been submitted by the last interim meeting and technical comment, this comment is temporary tabled by Editor.

CI XX SC 17.3.5.4 P 20 L 30 # 33  
 Vic Hayes Lucent Technologies  
 Comment Type T Comment Status A  
 Commenter suggests that the output is a requirement, rather than a fact.  
 SuggestedRemedy  
 Replace "is" by "shall be".  
 Proposed Response Response Status C  
 ACCEPT.  
 Replaced as suggested.

CI XX SC 17.3.5.5 P 21 L 5 # 34  
 Vic Hayes Lucent Technologies  
 Comment Type T Comment Status R  
 Commenter suggests that the experts consider whether the use of octal is a) unambiguous, and b) correctly / consistently specified taking that the notation for hexadecimal is done by 'X'....'.  
 Is the notation 'O'....' an industry standard use?  
 SuggestedRemedy  
 Consider to specify the same way as done in Fig 111. Or use the 'O'...' notation.  
 Proposed Response Response Status C  
 REJECT.  
 This comment was withdrawn.  
 The octal notation is commonplace in convolutional code literature.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line  
 RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

CI XX SC 17.3.5.5

Wednesday, May 19, 1999 13:25:49

P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC 17.3.5.6 P L # 35

Bob Ward

Comment Type T Comment Status A

Interleaving text in version 5.0 is incomplete

SuggestedRemedy

- 1) Described complete interleaving method, reintroducing equations from draft version 3.0
- 2) Include illustrations as presented at March meeting

Proposed Response Response Status C

ACCEPT.  
Interleaver text was replaced to align it with the document 99/47-r1.

CI XX SC 17.3.5.6 P 23 L 1 # 36

David Skellern Radiata Communicati

Comment Type T Comment Status A

The specification for interleaving changed dramatically between Draft 2.0 and Draft 3.1. Draft 2.0 specifies the mapping between the original location (k) of a bit in a block, and its final location (i) as:

$$k = 16i - (\text{NCBPS} - 1) \text{ floor}(16i/\text{NCBPS})$$

$$i=0, 1, \dots, \text{NCBPS} - 1$$

where NCBPS is the number of bits per OFDM symbol (formula 17, page 17 of Draft 2.0). Note that this method provides interleaving regardless of the modulation scheme.

The current interleaving scheme, introduced in Draft 3.1, (Draft 5.0, formula 16, page 23, note that i and j are transposed in the formula) is given as:

$$k = s \cdot \text{floor}(i/s) + (i + \text{floor}(16i/\text{NCBPS})) \bmod s$$

$$i = 0, 1, \dots, \text{NCBPS} - 1$$

where:

$$s = \max(\text{NCBPS}/2, 1)$$

This interleaving function results in bits being shuffled within groups of size s. This is an inferior scheme to that of Draft 2.0, especially for BPSK and QPSK modulation schemes where s = 1, resulting in an erroneous interleaving function of k = i. Also note that if 8PSK is to be supported at a later date, this would result in a fractional value of s = 1.5.

SuggestedRemedy

Return to previous interleaving method introduced in Draft 2.0.

Proposed Response Response Status C

ACCEPT.  
Replaced with a text based on document 99/47r1.

CI XX SC 17.3.5.6 P 23 L 1-18 # 37

Dean Kawaguchi Symbol Technologies,

Comment Type T Comment Status A

The technical description is not clear enough to ensure that implementations from different manufacturers will interoperate. There is no good reason for not making this part explicitly clear by providing the figures such as that presented in 99/075 in the March meeting.

*SuggestedRemedy*

Include better description or figures or both to make the interleaving algorithm explicitly clear.

Proposed Response Response Status C

ACCEPT.  
The commenter agreed that a pointer in the text to interleaver example tables in the Annex G will serve the purpose.

CI XX SC 17.3.5.6 P 23 L 1-18 # 66

Dean Kawaguchi Symbol Technologies

Comment Type TR Comment Status A

This is a repeat comment with change in comment type to TR.

The technical description is not clear enough to ensure that implementations from different manufacturers will interoperate. There is no good reason for not making this part explicitly clear by providing the figures such as that presented in 99/075 in the March meeting.

*SuggestedRemedy*

Include better description or figures or both to make the interleaving algorithm explicitly clear.

Proposed Response Response Status C

ACCEPT.  
The commenter agreed that a pointer in the text to interleaver example tables in the Annex G will serve the purpose.

CI XX SC 17.3.5.6 P 23 L 16 # 79

John Deane CSIRO Australia

Comment Type T Comment Status D

The specification for interleaving changed dramatically between Draft 2.0 and Draft 3.1. Draft 2.0 specifies the mapping between the original location (k) of a bit in a block, and its final location (i) as:

$$k = 16i - (\text{NCBPS} - 1) \text{ floor}(16i/\text{NCBPS}) \quad i=0, 1, \dots, \text{NCBPS} - 1$$

where NCBPS is the number of bits per OFDM symbol (formula 17, page 17 of Draft 2.0). Note that this method provides interleaving regardless of the modulation scheme.

The current interleaving scheme, introduced in Draft 3.1, results in bits being shuffled within groups of size s. This is an inferior scheme to that of Draft 2.0, especially for BPSK and QPSK modulation schemes where s = 1, resulting in an erroneous interleaving function of k = i. Also note that if 8PSK is to be supported at a later date, this would result in a fractional value of s = 1.5.

*SuggestedRemedy*

Revert to the Draft 2.0 scheme.

Proposed Response Response Status W

Tabled by Editor.

Since this had not been submitted by the last interim meeting and technical comment, this comment is temporary tabled by Editor.

#The interleaver subclause has been updated.

Wednesday, May 19, 1999 13:25:49

## P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC 17.3.5.6 P 23 L 16 # 80

John Deane CSIRO Australia

Comment Type TR Comment Status D

The specification for interleaving changed dramatically between Draft 2.0 and Draft 3.1. Draft 2.0 specifies the mapping between the original location (k) of a bit in a block, and its final location (i) as:

$$k = 16i - (\text{NCBPS} - 1) \text{floor}(16i/\text{NCBPS}) \quad i=0, 1, \dots, \text{NCBPS} - 1$$

where NCBPS is the number of bits per OFDM symbol (formula 17, page 17 of Draft 2.0). Note that this method provides interleaving regardless of the modulation scheme.

The current interleaving scheme, introduced in Draft 3.1, results in bits being shuffled within groups of size s. This is an inferior scheme to that of Draft 2.0, especially for BPSK and QPSK modulation schemes where s = 1, resulting in an erroneous interleaving function of k = i. Also note that if 8PSK is to be supported at a later date, this would result in a fractional value of s = 1.5.

*SuggestedRemedy*

Revert to the Draft 2.0 scheme.

Proposed Response Response Status W

Same as #75 except comment type. Tabled by Editor.

CI XX SC 17.3.5.6 P 23 L 3 - 18 # 38

Kazuhiro Okanou NEC Corp.

Comment Type T Comment Status A

The interleaving method described in the draft is different from the method described in the document titled DOC. IEEE P802.11-99/47r1, which has been approved at March meeting.

*SuggestedRemedy*

Add the 1st item described in section 5.2 of doc. IEEE 802.11-99/47r1.

Proposed Response Response Status C

ACCEPT.  
The subclause was replaced with the text as suggested.

CI XX SC 17.3.5.6 P 23 L 7 # 39

Richard van Nee Lucent Technologies

Comment Type T Comment Status A

The new interleaving and deinterleaving descriptions in 17.3.5.6 are not correctly modified. It should give the old interleaving and deinterleaving equations, followed by the permutation rules which are described by (15) and (16).

*SuggestedRemedy*

Fix the description so they match with IEEE802.11-99/047r1.

Proposed Response Response Status C

ACCEPT.  
Replaced the text with a text based on document 99/47r1.

Wednesday, May 19, 1999 13:25:50

**P802.11a Draft 5.0. Interim Comments and resolutions**

Cl XX SC 17.3.5.7 P 23 L 23 # 40

Vic Hayes Lucent Technologies

Comment Type T Comment Status A

The interleaver/de-interleaver change that was agreed upon in the March meeting, and that is described in doc 99:047r1, was not correctly incorporated into the text. In doc 47r1 the permutation was defined as a two step process whereas in drat 4.0 only one step is described.

*SuggestedRemedy*

Refer to document 99/47-r1 for the actual change and the actual place of the addition. In text format the text is as follows:

Data interleaving

All encoded data bits shall be interleaved by a block interleaver with a block size corresponding to the number of bits in a single OFDM symbol, NCBPS. The interleaver is defined by a two step permutation. The first insures that adjacent coded bits are mapped onto nonadjacent subcarriers. The second permutation insures that adjacent coded bits are mapped alternately onto less and more significant bits of the constellation, and by this long runs of low reliability (LSB) bits are avoided.

We shall denote by k the index of the coded bit before the first permutation, i shall be the index after the first and before the second permutation and j shall be the index after the second permutation, just prior to modulation mapping.

The first permutation, is defined by the rule:

$$i = (\text{NCBPS}/16) (k \bmod 16) + \text{floor}(k/16) \quad k=0,1,\dots,\text{NCBPS}-1 \quad (\text{eq1})$$

The function floor(.) denotes the largest integer not exceeding the parameter.

The second permutation is defined by the rule:

$$j = s * \text{floor}(i/s) + (i + \text{NCBPS} - \text{floor}(16*i/\text{NCBPS})) \bmod s \quad i=0,1,\dots,\text{NCBPS}-1 \quad (\text{eq2})$$

The value of s is determined by the number of coded bits per subcarrier, NBPSC, according to:

$$s = \max(\text{NBPSC}/2, 1). \quad (\text{eq3})$$

The deinterleaver, which performs the inverse relation, is also defined by two permutations. Here we shall denote by j the index of the original received bit before the first permutation, i shall be the index after the first and before the second permutation and k shall be the index after the second permutation, just prior to delivering the coded bits to the convolutional (Viterbi) decoder.

The first permutation is defined by the rule:

$$i = s * \text{floor}(j/s) + (j + \text{floor}(16*j/\text{NCBPS})) \bmod s \quad j=0,1,\dots,\text{NCBPS}-1 \quad (\text{eq4})$$

where s is defined in equation (eq3). This permutation is the inverse of the permutation described in (eq2).

The second permutation is defined by the rule:

$$k = 16*i - (\text{NCBPS}-1)\text{floor}(16*i/\text{NCBPS}) \quad i=0,1,\dots,\text{NCBPS}-1 \quad (\text{eq5})$$

This permutation is the inverse of the permutation described in (eq1).

Proposed Response Response Status C

ACCEPT.

Replaced with the suggested text.

Cl XX SC 17.3.8.1 P 28 L 30,38 # 81

John Deane CSIRO Australia

Comment Type E Comment Status A

The boxes labelled 'Mapping S/P' and 'Demapping P/S' I believe includes interleaving as part of the mapping process.

*SuggestedRemedy*

I think it would be helpful to either label the boxes like 'Interleaving & Mapping' (which would make them bigger) OR it might be better to add a note like

'The mapping function allocates the bit stream to parallel symbol elements and includes the interleaving function.'

Proposed Response Response Status C

ACCEPT.

The labels were changed.



Wednesday, May 19, 1999 13:25:50

P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC 17.5.4.3 P 47, et.al L 47 # 64  
 Valerie E. Zelenty IEEE Standards Dept.  
 Comment Type E Comment Status A  
 "The following clause..." should be changed to  
 "The following subclause..."  
 SuggestedRemedy  
 Check for each instance of the word  
 "clause" throughout this document  
 and see if it should be changed to "subclause."  
 Proposed Response Response Status C  
 ACCEPT.  
 Checked and replaced many "clause" with "subclause".

CI XX SC 17.5.5 P 47 L 45 # 82  
 John Deane CSIRO Australia  
 Comment Type T Comment Status R  
 I think it would be helpful to have a description of the intended preamble  
 processing as its structure is fully defined.  
 SuggestedRemedy  
 Proposed Response Response Status C  
 REJECT.  
 Rejected. We couldn't find preamble mentioned in the place stated by the comment.  
 The purpose of each part of the preamble is mentioned in the text but it is not the purpose  
 of the standard to describe the implementation of the receiver.

CI XX SC 17.5.5.2 P 48 L 19 # 83  
 John Deane CSIRO Australia  
 Comment Type T Comment Status A  
 I think it would be helpful to state that this is the mechanism for transfer  
 of SIGNAL normally following CCA(BUSY) then the data symbols following the  
 setting of RATE.  
 SuggestedRemedy  
 Proposed Response Response Status C  
 ACCEPT.  
 Changed  
 The RXD\_UNIT parameter shall be the n-bit combination of "0" and "1" for one symbol of  
 OFDM modulation. This parameter represents a single symbol which has been  
 demodulated by the PMD entity.  
 to:  
 The RXD\_UNIT parameter shall be "0" or "1" and shall represent either a signal field bit or  
 a data field bit after the decoding of the convolutional code by the PMD entity.

CI XX SC 17.5.5.7.3 P 50 L 51 # 84  
 John Deane CSIRO Australia  
 Comment Type T Comment Status R  
 This states that PMD\_RSSI.ind is 'continuously available'. Does this mean  
 it is an implementation issue, or the primitive is continually  
 generated, or generated at any significant change, or might RSSI be  
 'continuously available' via the management layer??  
 SuggestedRemedy  
 Clarification.  
 Proposed Response Response Status C  
 REJECT.  
 The availability of RSSI.indication is an internal issue of the implementation which doesn't  
 come into effect until PLCP requests for it.

Wednesday, May 19, 1999 13:25:51

P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC 18.1.1 P 10 L 38 # 44  
 Satoshi Obara Fujitsu  
 Comment Type E Comment Status R  
 "supplement" is wrong word.  
 SuggestedRemedy  
 The "supplement" should be change "clause".  
 Proposed Response Response Status C  
 REJECT.  
 Subclause 18.1.1 is for TGb.  
 This comment should direct to TGb.

CI XX SC 9.1 P 10 L 10 # 48  
 Vic Hayes Lucent Technologies  
 Comment Type E Comment Status A  
 What is meant with "of D4.0b"? This supplement only refers to 802.11 and not to draft 11b,  
 if that was meant.  
 SuggestedRemedy  
 Correct the reference.  
 Proposed Response Response Status C  
 ACCEPT.  
 Changed  
 "D4.0b" to "current edition of IEEE Std 802.11, 1997 Edition".

CI XX SC 9.1 P 7 L 13 # 85  
 John Deane CSIRO Australia  
 Comment Type E Comment Status A  
 PLME-.TXTIME.request should be PLME-TXTIME.request  
 SuggestedRemedy  
 kill a '.'  
 Proposed Response Response Status C  
 ACCEPT.  
 Changed as suggested.

CI XX SC 9.1 P 7 L 14 # 86  
 John Deane CSIRO Australia  
 Comment Type T Comment Status A  
 Clause 17.3.5.10 does not exist & the primitives  
 are not defined.  
 SuggestedRemedy  
 Define them.  
 Proposed Response Response Status C  
 ACCEPT.  
 Changed to "subclause 17.4.3".

CI XX SC 9.1 P 7 L 14 # 68  
 Anil K. Sanwalka Neesus Datacom  
 Comment Type T Comment Status A  
 There is not 17.3.5.10. There is a 7.4.3 which talks about TXTIME.confirm but no .request.  
 I think Michael provided text for these at the last meeting.  
 SuggestedRemedy  
 Proposed Response Response Status C  
 ACCEPT.  
 The reference was changed to 17.4.3.

All primitives should be defined in clause 10.  
 Two subclauses:  
 10.4.6 PLME-TXTIME.request  
 10.4.7 PLME-TXTIME.confirm  
 are generated and recommended to add the clause 10.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line  
 RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

CI XX SC 9.1

Wednesday, May 19, 1999 13:25:51

P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC A.4.3 P 52 L 24 # 49  
 Bob O'Hara Informed Technology,  
 Comment Type T Comment Status A  
 Is the "High Speed PHY Layer" part of this PHY? If not, this entry should not be part of this document.  
 SuggestedRemedy  
 Remove the entry.  
 Proposed Response Response Status C  
 ACCEPT.  
 The column of "High Speed PHY Layer" was deleted.

CI XX SC A.4.8 P 53 L 12 - 22 # 50  
 Bob O'Hara Informed Technology,  
 Comment Type T Comment Status A  
 There is no normative requirement stated in the referenced clause. Thus, the items here can not be mandatory.  
 SuggestedRemedy  
 Correct the referenced clause to include "shall" statements and "may" statements to make the various rates mandatory or optional.  
 Proposed Response Response Status C  
 ACCEPT.  
 Added "Data rates of 6, 12 and 24 shall be supported, the other rates may be supported." in subclause 17.2.2.2 which was the referred subclause.

CI XX SC A.4.8 P 54 L 33 - 35 # 51  
 Bob O'Hara Informed Technology,  
 Comment Type E Comment Status A  
 Since items OF3.1-OF3.3 do not appear in the status column as a predicate, they should not be preceded by a "\*" in the item column.  
 SuggestedRemedy  
 Remove the "\*".  
 Proposed Response Response Status C  
 ACCEPT.  
 Removed the "\*". (Three asterisks)

CI XX SC A.4.8 P 54 L 36 - 38 # 52  
 Bob O'Hara Informed Technology,  
 Comment Type E Comment Status A  
 Since each of these items (OF3.3.1 - OF3.3.3) are used as predicates in the status column (see items OF4.1.1 - OF4.1.3), they must be preceded by a "\*" in the Item column.  
 SuggestedRemedy  
 Insert the "\*".  
 Proposed Response Response Status C  
 ACCEPT.  
 Inserted the "\*" in the suggested item columns.

CI XX SC A.4.8 P 54 L 36 - 38 # 53  
 Bob O'Hara Informed Technology,  
 Comment Type T Comment Status A  
 Is it really the intention to require that an implementation is capable of operating in only one if the UNII sub-bands?  
 SuggestedRemedy  
 Remove the ".1" from the status column for each of the entries.  
 Proposed Response Response Status C  
 ACCEPT.  
 withdrawn

CI XX SC A.4.8 Item OF2.15 P 54 L 11 # 54  
 Bob O'Hara Informed Technology,  
 Comment Type T Comment Status A  
 There is no normative requirement stated in the referenced clause. Thus, this item can not be mandatory.  
 SuggestedRemedy  
 Correct the referenced clause to include "shall", as needed, to make the required modulations mandatory.  
 Proposed Response Response Status C  
 ACCEPT.  
 The text referred was modified to include "shalls".

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line  
 RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

CI XX SC A.4.8 Item OF2.15

Wednesday, May 19, 1999 13:25:52

**P802.11a Draft 5.0. Interim Comments and resolutions**

CI **XX** SC **A4.8** P **54** L **52** # **55**

Stanley Reible MICRILOR, Inc

Comment Type **T** Comment Status **R**

This equipment may often be packaged with other heat dissipating hardware. Maintain a maximum ambient operating temperature of 40 degrees C may be hard to provide in such applications and limit equipment use.

*SuggestedRemedy*

Review temperature requirements for such high data rate products.

Proposed Response Response Status **C**

REJECT.  
The temperature types are inherited from the current 802.11 standard.

CI **XX** SC **A4.8** P **54** L **53** # **56**

Stanley Reible MICRILOR, Inc.

Comment Type **T** Comment Status **R**

An ambient temperature of -30 degrees C and lower is frequently encountered in Industrial applications.

*SuggestedRemedy*

Please review this specification to insure that the needs of anticipated users will be meet.

Proposed Response Response Status **C**

REJECT.  
The temperature types are inherited from the current 802.11 standard.

CI **XX** SC **all area** P **all area** L # **57**

Satoshi Obara Fujitsu

Comment Type **E** Comment Status **R**

All figure numbers and table numbers should be adjusted to base document.

*SuggestedRemedy*

If possible, it should be "clause number - figure(table) number". For example, if it is figure 1 in clause 18, it is "Figure 18-1".

(Similarly, the change of base document may be needed?)

In case of existing many figures and tables, it is easy for the readers to understand the 802.11. And, other 802 standards use the above format.

Proposed Response Response Status **C**

REJECT.  
Follow the base 802.11 standard that has the same figure numbering strategy.

CI **XX** SC **Annex A** P **52** L **5** # **58**

Vic Hayes Lucent Technologies

Comment Type **E** Comment Status **A**

The editor's instruction is not according to the convention.

*SuggestedRemedy*

Make the characters BOLD and ITALIC.

Proposed Response Response Status **C**

ACCEPT.  
Changed as suggested.



Wednesday, May 19, 1999 13:25:52

P802.11a Draft 5.0. Interim Comments and resolutions

CI XX SC misc P misc L misc # 61

Roger Marks NIST

Comment Type E Comment Status A

I have several editorial comments:

Page 1

Regarding the Title:

"Wireless Medium Access Control (MAC) and physical layer (PHY) specifications: High Speed Physical Layer in the 5 GHz band"

I suggest a more self-consistent capitalization:

"Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications: High Speed Physical Layer in the 5 GHz Band"

Regarding the Abstract:

"Changes and additions to IEEE Std. 802.11 to support the new high rate Physical layer for operation in the 5 GHz band are provided."

I suggest a more self-consistent capitalization:

"Changes and additions to IEEE Std. 802.11 to support the new high rate physical layer for operation in the 5 GHz band are provided."

Page 2

The Keywords "OFDM" and "U-NII" should be expanded

Page 3

Regarding the Participants:

"At the time of sending the draft standard to Sponsor Ballot, IEEE 802.11 had the following officers:"

Since the draft standard is in Sponsor Ballot, this information should be provided.

Page 6, Line 53

change "Unlicenced" to "Unlicensed"

Page 7 Line 12: change "5GHz" to "5 GHz"

Page 55, Lines 10-12

(5.15-5.25GHz) => (5.15-5.25 GHz) (5.25-5.35GHz) => (5.25-5.35 GHz) (5.725-5.825GHz) => (5.725-5.825 GHz)

SuggestedRemedy

Proposed Response Response Status C

ACCEPT.

Changed to:

"Wireless Medium Access Control (MAC) and Physical Layer (PHY) specifications: High Speed Physical Layer in the 5 GHz Band" by following the current standard.

A space between "5" and "GHz" added.

The key words appear in the abbreviations and acronyms part.

CI XX SC Participants P 0 L ?? # 62

Stanley Reible MICRILOR, Inc

Comment Type E Comment Status A

Introduction: List of participants should be provided so that voters can review when casting their ballots.

SuggestedRemedy

Complete

Proposed Response Response Status C

ACCEPT. List will be added into draft 5.5