
**IEEE P802.11
Wireless LANs**

**Terntative Agenda for last part of Interim May 1999 session of
meeting:
Tele-conference on May 28, 1999**

Date: May 19, 1999

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Objectives of this conference: To resolve any additional comments from from balloters that have not submitted their votes and comment 67 of Tga (Chair's note: plus the comments tabled by the editor)

1 Roll call

The following ports have been reserved, please mention the people present:
Al Petrick, Mat Shoemake, Dean Kawaguchi, Harry Worstell, John Kowalski, Hitoshi Takanashi, Bob O'Hara,
David Bagby, Naftali Chayat, Tal Kaitz, Vic Hayes

2 Secretary, approval of agenda**3 TGb**

3.1 Latest information from commenters (action: Vic)

3.2 Comments received after TGb adjournment: none

3.3 Motion to approve Recirculation Ballot

To to submit 802.11a/D5.3 for Sponsor recirculation ballot

3.4 Any Other Business

4 TGa

4.1 Latest information from commenters (action: Vic)

4.2 Comments received after TGa adjournment: yes

4.3 Comment resolution (see below)

63, 76, 75, 26, 24, 78, 79, 80, 67

4.4 Motion to approve Recirculation Ballot

To make the changes to 802.11a/D5.3 as agreed to in response to comments, and to submit 802.11a/D5.5 for Sponsor recirculation ballot

Wednesday, May 19, 1999 13:20:31

P802.11a Draft 5.0. Comments for May 28, 1999 tele-conference

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 **17.3.2** 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.

SuggestedRemedy

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 13:20:32

P802.11a Draft 5.0. Comments for May 28, 1999 tele-conference

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 17.3.3 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 # 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.

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

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P802.11a Draft 5.0. Comments for May 28, 1999 tele-conference

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

$$N_{sym} = \text{floor}((16 + 8 * \text{LENGTH} + 6 + \text{NDBPS} - 1) / \text{NDBPS}) \quad (11)$$

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 17.3.5.6 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.

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P802.11a Draft 5.0. Comments for May 28, 1999 tele-conference

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 **17.3.8.3.3** P **30** L **50** # **67**
 Jeff Fischer MICRILOR, inc.

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

It is impractical to build a radio with two different power amplifiers; their use dependent which channel is selected.

SuggestedRemedy

The precise backoff should be calculated and stated such that the adjacent channel rejection is met and the local regulations can be met with some practical power specifications. If the specifications mean that there must be power control that is effected differently across selected channels than this must be specified in the standard.

Proposed Response Response Status **W**

#Temporary tabled. This will be discussed in the next tele-conference.

PROPOSED REJECT.

The suggested remedy calls for specifying in the standard a method to meet regulatory specifications. This should not be done in the standard but rather should be left to the implementer, who wants to built an equipment which operates in more than one sub-band. For this reason, we reject the comment.

4.5 Any Other Business

5 Adjourn May 1999 interim session of meetings

