IEEE 802.11
Wireless Access Method and Physical Specification

Title: **Comments on the Draft standard version b2**

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Abstract: This document gives a collection of comments onthe darft standard.

Introduction:

This is a list of comments on the current draft standard. referenced by section numbers. The intend is to list inconsistencies, and indicate problems. It is not intended to be complete.

Comments List:

Section 1.2 Definitions:
- Define MPDU

Section 2.7.2
- For multirate support, add "Supported rate" indication in both the Association-request and response.
- In the Associate-response, need to add "Station ID", (SID).

Section 2.7.3
- Same comments as for section 2.7.2

Section 2.7.4
- The direction should be STA to AP.

Section 3.1
- The indention level of sections 3.1.1 and beyound do not seem correct.
- There is no section on the general description of the Async services.

Section 4.1
- General:
  Need to provide the PHY with a length field (in octets). Where to put that? Suggest to put it in the fixed part of the header.
- bullet 3, change MPDUID to MSDUID.
- Line 23,24 update if new Element structure proposal is accepted.
- Suggest to put More bit next to other Power Management related bits M1, M2.
- Figure 4-1, b2 and b3 in Type field does not match with the description in section 4.1.3
- Type description of management, Data and Control, could be improved by representation in bullet items.
- Data Subtype decoding could add (D)TBS.
- Do we need CF-Ack subtype. Could be ordinary Ack.

Section 4.1.5
- Change title to MSDUID, and delete ConnID.
- ConnID was primarily associated with a possible use for TBS connections. Now CF-TBS is deleted, we only have CF-Async left that uses the MSDUID and Async addressing formats.
- Hash needs to be specified. It should be analyzed whether it is needed that also the NID is used in the hash.

Section 4.1.7
- Update if new element structure is accepted.

Section 4.1.10
- Allow elements in all frames.
- Show optional element field in section 4.1.10.1.
- Suggest to put "Duration" and Fragment number in an Element field, so that it is not needed in non-fragmented Data frames. This also applies to the Ack frame description in section 4.1.10.2
- Restrict the use of elements to the first fragment of an MSDU only.
- Specify "Duration" in usec.

Section 4.2
- Add Poll-Data.
- Change line 12 MPDUID in MSDUID.

Section 4.3
- Update when new element structure accepted.
- We should specify that the Beacon interval is referenced to the TSF timer, such that the TSF timer works in modulo (n*Beacon Interval).
  Suggest that the Timestamp range is specified between 0 and n* Beacon Interval.
- In section 4.3.8. The (Re)Associate element should specify parameters like "Previous_AP", and "Supported_Rate".

- Suggest to reorganize the element definitions, such that the several parameters are combined in one element for the Beacon.

Sevtion 5.1
- line 32. With the adoption of the DTBS service as the only Time Bounded Service, there is no need anymore for Call setup and tear down support in the MAC.
- Shouldn't Fragmentation be described as a function of the MAC Data Service, rather then in a separate section? Its utilization need to be introduced somewhere.

Section 5.1.4
- aMin_Full_MPDU is not intended to represent the minimum size that the PHY can handle. A parameter was accepted that represents the minimum fragment size that a MAC may use for the fragmentation process. This is meant to prevent that a maximum MSDU size is shopped in too many fragments. In implementations it will limit the number of buffers that needs to be dealt with in the reassembly process. So this parameter should (PHY independent) describe the minimum for aFragment_Payload in the MAC.
- On figure 5-xx, the same problem. aMin_Full_MPDU is not a PHY parameter.

Section 5.2
- There is a mismatch in names between section 5.1.5 (RTS_Threshold) and the NoRTS parameter mentioned in line 26.
- Line 43, change reference into 5.2.6.4.
- section 5.2.4.1, also SIFS before transmission of a subsequent fragment.
- section 5.2.4.2 line 29, change to CF-Burst.
- section 5.2.6 line 16; Suggest to add RTS to list.
- section 5.2.6.2 line 14+
  Backoff timer is only decremented on the condition that the medium is free, so if the Backoff is zero, then transmission starts immediately, and there are no two cases of medium free and busy. The medium is free, otrherwise the backoff timer cannot become zero.
- Section 5.2.6.3 line 9 and 13:
  The lines should say that because it is a re-transmission, the CW will be doubled (not greater then one, CW=CWmin*>1).
- section 5.2.6.5 lines 12 and 13 can be deleted
- section 5.2.9 line 26: "via" should be "to".
- section 5.2.10 line 31.
  Ack only on unicast frames, but apart from data also Req, Resp, Poll, ATIM.

Section 5.2.11
- Lines 14-17 do also apply to Multicast/Broadcast to an AP.
- Lines 19-21 should only be limited to transmission procedure by a station, not an AP.
- Lines 33-34 do also apply to Multicast/Broadcast to an AP.

Section 5.2.12

- Line 40-42. Change MPDUID to MSDUID.
- Page 69 lines 7-11 does apply for "Fast Response Possibility" on a Poll.

Section 5.7.2.1 Tx State Machines

- PHY preamble and start delimiter generation are in the PHY (Also for IR??).
- Need to send a length field to the PHY.
- No end delimiter, is in PHY. (also for IR??)

Tx state machine notes:
- line 16: Delete ConnID.
- Need also provisions to update Timestamp field just before transmission. How to cover this? In statemachine, or in text somewhere.

Rx-State Machine + Figure
- Need to be adapted to handle fragmentation aspects, which are the handling of the Duration field in Data and Ack frames. Element interpretation?
- The description on page 87 does not match the diagram. transitions R14a and R14b are mentioned which are only single transitions in the diagram.
- R20a and R30a descriptions, do mention NAv calculation with offset. Need to more clearly specify how the "Duration" field values are defined. Suggest that all calculation is done in the transmitter such that the NAV does represent "Time from end of frame to end of Ack". This allows rate independent NAV updates in all stations.
- State R4 description discusses "ToAP" filtering, and frame delivery to the LLC entity. This still needs postprocessing for duplicate detection, and fragmentation re-assembly.
- Is My_addr also activated on reception of a Broadcast or a destination of a multicast frame? Where is the To_AP filtering done.

Control State Machine
- Transition C07 should only be taken when Backoff=0.
- Need update for fragmentation. Need to result in transmission after SIFS.
- Functionality to force a backoff immediately following a succesfull transmission, to assure fairness is not included.
- Also need a way to transmit something with prior backoff. Where is that to be covered.
- Broadcast/Multicast with ToAP bit set should be Acked.

Section 7.1.2.3
- The Target Beacon interval should be tied to the TSF-Timer, such that the Target Beacon Transmission Times (TBTTs) are at (TSF-Timer modulo Beacon Interval).
- Therefore, the TSF timer should work modulo (n* Beacon Interval).

Section 7.1.2.4
- Sinse the SFD is in the PHY preamble, we need to specify a different reference for the Timestamp. This could be the start of the MAC Header.
- The TSF Timer update algorithm is not given in the section as suggested by the text.

Section 7.1.3.2
- I believe that the Probe would be send to a sort of Broadcast BSSID (all 1's), so an ESSID of the current network and a all 1's BSSID that is recognized by all stations, much like a Broadcast address.

- The response is then send with the same (B)BSSID, while it should contain specific information like the Source NID (ESSID+BSSID) of the responding station, its Timestamp, the Weigth and possible additional information.
  This should include the Beacon interval, and associated information.

Section 7.2.1.1

- AP's can respond to a Poll immediately by sending the buffered frame after the SIFS. However instead, they may return an Ack, and transmit the buffered frame for that station as soon as possible.

Section 7.2.1.7

- Stations do not wake up in an interval relative to the last received Beacon, but at the TBTT as indicated by the TSF Timer.

This is as far as I got.

References:

[1] "Draft Standard IEEE 802.11", P802.11 Editors P802.11-93/20b2.