IEEE P802.11  
Wireless LANs

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| LB 200 Comment Resolution for Clause 8.7 (up to 8.7.3) | | | | |
| Date: 2014-01-31 | | | | |
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Abstract

This submission proposes resolutions for comments in clause 8.7 (up to an including 8.7.3) of TGah Draft 1.0 with the following CIDs:

1443, 1444, 2020, 2313, 2812, 1554, 1560, 2821, 1165, 1445, 1446, 1447, 1563, 1564, 1565, 2425, 2426, 2427, 2428, 2431, 2568, 2663, 2739, 2819, 2820, 1561, 1562, 1906, 1448, 1449, 1450, 2550

Revisions:

Rev 0 – Initial version of the document

Rev 1 – Addresses some comments received by adding some clarification text to distiguish a Probe Response frame as a response to a Probe Request and as a response to an NDP Probe Request (changes w.r.t. Rev 0 are highlitghted in green).

Rev 2 – Added missing description for A1 and A2 fields for Short Data frames with Type field equal to 3 (which are both MAC addresses)

Rev 3 – Added missing references for CID 2020, and Addressing the problem of TGah conformance to the existing baseline description that says that all frames include a minimum set of frame fields, i.e. FC, DUR, A1, FCS.

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGah Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGah Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGah Editor: Editing instructions preceded by “TGah Editor” are instructions to the TGah editor to modify existing material in the TGah draft. As a result of adopting the changes, the TGah editor will execute the instructions rather than copy them to the TGah Draft.***

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| --- | --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1443 | 137.33 | 8.7 | There is inconsistency in the field naming i.e., sometimes they start with capital letter and sometimes with lower case (e.g., protocol version, type, short etc.). Keep consistency across the subclause. | Use capital letters for fields and subfields throughout this subclause | Accepted –  TGah editor to make the changes proposed by the commenter. |
| 1444 | 137.33 | 8.7 | What are the values for each of the subfields of the Frame Control field for Short frames? | Specify the values of the subfields of the Frame Control field for each of the Short frames. | Revised **–**  Agree in principle with the commenter. Proposed resolution is to specify the values of the subfields of the general FC field that applies to Short Data and Short Magement frames other than Short Probe Response frames. For Short Control frames further changes can be found in doc 14/0040r0.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 2020 | 33.34 | 8.7 | Short MAC format may not bring meaningful performance improvement for wider BW data devices like 8MHz and 16MHz. Not necessary to support multiple modes in this case. | Make short MAC format as optional, add capability fields correspondingly. | Revised –  The following Short frames are already specified as optional:  STACK and TACK frames are optional and are transmitted after TWT negotiation (see 9.3.2.8 and 9.44): “transmission of TACK or STACK frame is required if Target Wake Time is negotiated 9.41 (Target Wake Time (TWT))” and may be sent under Flow Control procedure to TWT STAs as described in 9.48.4.  BAT frame is optional and is transmitted after TWT negotiation (proposed resolution for this part is included in resolutions for subclause 9.22 BlockAcknowledgment (Block Ack)).  TGah editor to make the changes shown in doc 14/083r1 (related to subclause 9.22 Block Ack).  TGah editor to make the changes shown in doc 14/0308r0 (related to subclause 9.48.4 Flow Control).  Short Probe Response frames are optional and transmitted by an AP that supports their transmission upon request (see 10.1.4.3.1). Proposed resolution below clarifies some aspects.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550.  Short Data frames and other Management frames are optionally transmitted by a STA and their reception is mandatory at the receiver as their use is very beneficial for sensor and relay applications. Refer to comment resolution document 14/0079r0.  TGah editor to make the changes shown in 14/0079r0. |
| 2313 | 137.33 | 8.7 | Although short frames can decrease MAC header overhead, it is less useful in offloading BSS with wider operation channel. | Allow an offloading STA to indicate whether it implement short frames. When an offloading STA doesn't implementshort frames, another STA/AP shall never sends short frames to it. | Revised –  Proposed resolution is the same as for CID 2020.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 1560 | 137.47 | 8.7.2 | It appears this clause is attempting to reduce the header size. It is unclear what functionaity has been removed as a result | None. Howver, I would appreciate a reference to document that explain the motivation for the short header and an explanation of what existing 802.11 functionality is not possible with th short header. | Rejected –  The comment does not identify a technical issue. The design of short frames that have a reduced overhead took into account removing all information that is not required all the time in a normal MAC header. Given that a STA has an AID assigned by the AP then this identifier can be used instead of the MAC address (for more details refer to doc 12/857r0 and references therein). |
| 2812 | 137.33 | 8.7 | The utility of short MAC frames is limited in offload applications. | Offloading STAs should be able to indicate support for short frames. Disallow APs from sending short frames to STA implementations that do not support short frames | Revised –  Proposed resolution is the same as for CID 2020.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 1554 | 138.00 | 8.7.2 | The NAV seems to have disappeared. Does this mean NAV is no longer used? | None yet. Clarify | Rejected –  Short frames do not have a Duration field that sets the NAV. However, RID mechanism is defined for S1G that uses RESPONSE\_INDICATION field in the SIG field to set the RID counter (see subclause 9.3.2.4a) which interoperates with NAV. For further details refer to subclause 9.3.2.1, 9.3.2.4a and 9.3.2.13 of IEEE802.11ah. |
| 2821 | 137.00 | 8.7.2 | The definition of A1-A4 should be given. | Suggest to use Address 1 - Address 4 instead. | Rejected –  The definition of A1-A4 is already given in 8.7.3.2 (Address fields):  “There are up to four address fields in the short MAC frame format. These fields are used to indicate the recipient of the frame (A1), the transmitter of the frame (A2), and optionally the source and/or the destination of the frame (A3 and/or A4).” |
| 1165 | 141.39 | 8.7.3.1 | "The addressed recipient takes no action uponthe receipt of the frame except for recording the state. The recipient can expect a BlockAckReq framein the future to which it responds using the procedure described in 9.22 (Block Acknowledgment (Block Ack))."  Clause 8 is for describing structure. "takes no action" and "can expect .. it responds" are describing behavior, and do not belong here. | Move cited text to Clause 9, or reword so that it captures only the meaning of the bit, not how it affects behavior. | Rejected –  The text cited in the comment uses a language which is the same as the text found in Baseline REVmc 2.0 (see Table 8-10): “The addressed recipient takes no action upon the receipt of the frame except for recording the state. The recipient can expect a BlockAckReq frame in the future to which it responds using the procedure described in 9.22 (Block Acknowledgment (Block Ack)).” |
| 1445 | 138.21 | 8.7.3.1 | The Frame control of Short Control frames is also different from the basic Frame Control field. Hence the exception in the Frame Control format is applicable to Short Control frames as well. | Add immediately before "is illustrated in Figure 8-532b (Frame Control field))" the following text: " and Short Control frames (8.7.4 (Short Control frames))" | Revised –  Agree in principle with the commenter. Resolution accounts for the proposed change.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 1446 | 139.19 | 8.7.3.1 | Short frames with Type value set to 1 define also Short Probe Response frames that do not have an A1 or A2 field as an SID. | Remove "where either A1 or A2 field is an SID as indicated in Table 8-01b (From DS values in short frames)" from the second sentence of paragraph starting in line 18 of page 139. Add "except for Short Probe Response frames, " immediately after "less than 2," in line 38 of page 139. | Revised –  Agree with the commenter.  Resolution includes proposed change. Regarding the second part of the suggested resolution Short Probe Response frames do not have a From DS field. Hence added “if present” to clarify this part.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 1447 | 139.26 | 8.7.3.1 | The three paragraphs from line 26 to line 35 describe the PTID/Subtype field for different types of frame. To reduce redundancy consider unifying the description in one paragraph | Replace the three paragraphs from line 26 to 35 with the following: "The PTID/Subtype field is 3 bits in length and it contains:  - The 3 LSBs of the TID subfield defined in 8.2.4.5.2 (TID subfield) for Short Data frames (Type field set to 0 and 3).  - The Subtype for Short Management frames (Type field set to 1) as described in 8.7.5 (Short Management frames)  - The Subtype for Short Control frames (Type field set to 2) as described in 8.7.4 (Short Control frames)" | Revised –  Agree with the commenter.  Proposed resolution is inline with suggested change.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 1563 | 139.18 | 8.7.3.1 | The paragraph defines what A1 and A2 contain in various cases. However, it says nothing about A1 and A2 in case of the type field equal to 2 | Specifty A1 and A2 for type field = 2 | Revised –  Agree with the commenter.  Resolution specifies the A1 and A2 field contents for Short Control frames (type field equal to 2).  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 1564 | 139.50 | 8.7.3.1 | A1 contains the "MAC address of the receiver", wheres as A3 contains the "Destination address". The language is inconsistent | Change so that the language is consistent. For example, "the MAC address of the destination". Similar situation with A4 | Revised –  Agree in principle with the commenter. Proposed resolution is inline with the change.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 1565 | 139.50 | 8.7.3.1 | The use of an SID in A1 or A2 seems to save 4 octets. | None. Explain why saving 4 octets out of 12, 18, 24 octets is justified given the extra complexity? | Rejected –  The comment does not identify a technical issue. The design of short frames that have a reduced overhead took into account removing all information that is not required all the time in a normal MAC header. Given that a STA has an AID assigned by the AP then this identifier can be used instead of the MAC address (for more details refer to doc 12/857r0 and references therein). |
| 2425 | 138.64 | 8.7.3.1 | It's confusing to suggest in line 22 above that Short Probe Responses are described elsewhere, and then specify some aspect of them here (especially since 139.21 and Table 8-301b then do not cover Short Probe Responses) | Put all the Short Probe Response stuff in one place | Revised –  Sentence in line 22 introduces the general format of the Frame Control field that is valid for Data and Management frames (an exception is needed here for Short Probe Response). Line 64 in Table 8-301a lists the A1 and A2 fields of the Short Probe Response frames (as an exception as well to the Management frame format). Table 8-301b does not cover the Short probe Response because it does not have the From DS field in the frame control field. Proposed resolution is to add appropriate caveats in the text to avoid confusion.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 2426 | 139.18 | 8.7.3.1 | This paragraph duplicates information in the table | Deduplicate the information | Revised –  Proposed resolution incorporates changes to the paragraph that make it more informative than the general listings in the Table.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 2427 | 139.18 | 8.7.3.1 | "type" should be "Type" when referring to the name of a field | As it says in the comment | Accepted –  TGah editor to make the changes suggested by the commenter. |
| 2428 | 139.38 | 8.7.3.1 | What is the From DS field set to for Types >= 2? | Say it is reserved in other cases | Revised –  The From DS field is not part of the last octet of the frame control field of Short Control frames (Type = 2). But it is for Short Data frames of Type 3. Hence, proposed resolution is to clarify these aspects by stating that the last octet of the FC of Short Control frames is different from general FC.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 2431 | 138.22 | 8.7.3.1 | This states the format of the FCf for all but SPRs is shown in Figure 8-532b, but Figure 8-532d shows a different format for Short Controls | Resolve the inconsistency (probably by adding extra caveats -- but then what exactly is 8.7.3.1 about? It seems specific to Short Data frames rather than generic) | Revised –  Agree with the commenter. Proposed resolution is to add the extra caveat for Short Control frames.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 2568 | 138.22 | 8.7.3.1 | The Frame Control field format shown in Figure 8-532b is not used in Short Control Frames. | Modify the 1st paragraph of 8.7.3.1 as follows: --- The format of the Frame Control field of the short MAC header except the Short Probe Response frame (8.7.5.3 (Short Probe Response frame format)) and the Short Control frames (8.7.4 (Short Control frames)) is illustrated in Figure 8-532b (Frame Control field). | Revised –  Agree in principle with the commenter. Proposed change accounts for the suggested change.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 2663 | 139.35 | 8.7.3.1 | The referred section number (8.7.3b) is wrong. | Change to 8.7.3b to 8.7.4 | Revised –  Agree with the commenter. Proposed resolution fixes the reference.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 2739 | 141.04 | 8.7.3.1 | Does Ack Policy field include the case of (NDP) ACK and (NDP) BA? | Please clarify | Rejected –  The Ack Policy specifies whether the transmitter expects an acknowledgment or not for the eliciting frame. Selection of NDP Ack/BlockAck frames rather than ACK/BlockAck frames is already specified 9.3.2.8 for Ack selection and in 9.22 for BlockAck selection. |
| 2819 | 139.00 | 8.7.3.1 | The "From DS field" indicates two possible cases if it is set to 0. But it is not clear when the bit is for "frames transmitted by a Non-AP STA to an AP" and when it is for "frames transmitted by a Non-AP STA to Non-AP STA" | Please add the condition for each possible case. | Rejected –  As indicated in Table 8-301b, the From DS field is set to 0 in two possible cases: for frames transmitted by a non-AP STA to an AP (RA field is the MAC address of the AP) and for frames transmitted by a non-AP STA to another non-AP STA in a direct link session (RA field is the MAC address of the peer STA in the direct link session). Hence there is not ambiguity in the existing text. |
| 2820 | 139.00 | 8.7.3.1 | "Non-AP" should be "non-AP" | "Non-AP" should be "non-AP" | Agree with the commenter.  Revised –  TGah editor to replace “Non-AP” with “non-AP” throughout D1.0. |
| 1561 | 138.61 | 8.7.3.1. | State's "Either A1 or A2 is an SID". However, it seems to intend "One of A1 or A2 is an SID" | Change to "One of A1 or A2 is an SID". Similar comment on page 139, lines 18, 20 | Revised –  Agree in principle with the commenter. The confusion derives from the fact that the statement may be classified as either an inclusive logical disjunction or as an exclusive logical disjunction (which is the intent of this normative text). Hence, to avoid confusion the proposed resolution is to clearly indicate the format of the other A1 or A2 field in the paragraph that follows the table as suggested by CID 1562.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 1562 | 138.61 | 8.7.3.1. | State's "Either A1 or A2 is an SID". However, does not say what happens to the other address. Presumably it contains a 48 bit MAC address. | State the form of the other address | Revised –  Agree in principle with the comenter. Proposed resolution accounts for the suggested change.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 1906 | 160.30 | 8.7.3.1. | Short Frame Control field. I see that it is 2 octets in length, the same as the standard. I see that 'retry' is missing, is this a good thing? | Please explain how retries are identified and handled so as to justify not including it in the Frame Control field. Is this covered anywhere? | Rejected –  Handling of duplicate transmissions for Short frames is described in 9.3.2.10 (Duplicate detection and recovery) where detection and recovery is performed without the auxiliary of the Retry field for Short frames. |
| 1448 | 140.32 | 8.7.3.2 | Second paragraph of subclause contains "can" which should not be used in clause 8. | Replace "can be" with "is" in second paragraph of subclause 8.7.3.2. | Rejected –  “can” indicates descriptive text and is already used multiple times in clause 8 (Refer to REVmc2.0). |
| 1449 | 141.58 | 8.7.3.2 | Some typos in the sentence: 1) there is a link to an old table reference. 2) Short data frames of type 0 use the From-DS field. 3) Type 1 are management frames and Type 2 (control) frames do not have a From DS field. | Replace sentence "The AID subfield contains an AID as specified in Table 8.7.3.1-2-From DS values in short data frames of Type 0-2." with the following sentence " The AID subfield contains an AID as specified in Table 8-301b (From DS values in Short frames). | Revised –  Agree with the commenter. Proposed resolution accounts for the change.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |
| 1450 | 141.62 | 8.7.3.2 | Sentences " ... if the A3 is present ..." in line 62 and " if the A4 is present " in line 64 are missing the term "field". | Add "field" immediately after "A3" in line 62 and after "A4" in line 64. | Accepted –  TGah editor to make the chages suggested by the commenter. |
| 2550 | 141.59 | 8.7.3.2 | The 3rd paragraph of 8.7.3.2 refers Table 8.7.3.1, which is not exist. Also, Type of short data frame is specified as 0 or 3. This paragraph shall describe about short frame, not short data frame. | Modify the 3rd paragraph of 8.7.3.2 as following: --- The AID subfield contains an AID as specified in Table 8-301b in short frames of Type 0, 1, and 2. | Revised –  Agree in principle with the commenter. Proposed resolution accounts for the change.  TGah editor to make changes shown in 14/0211r3 under the heading for CIDs from 1443 to 2550. |

**Discussion:** *None.*

**8.2.3 General frame format**

**TGah editor: *modify the first paragraph of 8.2.3 as shown:***

The MAC frame format comprises a set of fields that occur in a fixed order in frames. Figure 8-1 (MAC frame format) depicts the general MAC frame format. The first 2 bits of the first subfield (Protocol Version) of the Frame Control Field and the last field (FCS) in Figure 8-1 (MAC frame format) constitute the minimal frame format and are present in all PV0 MPDUs and PV1 MPDUs, including reserved types and subtypes. Within PV0 MPDUs, the first three fields (Frame Control, Duration/ID, and Address 1) and the last field (FCS) in Figure 8-1 (MAC frame format) constitute the minimal frame format and are present in all PV0 MPDUs, including reserved types and subtypes. The fields Address 2, Address 3, Sequence Control, Address 4, QoS Control, HT Control, and Frame Body are present only in certain frame types and subtypes. Each field is defined in 8.2.4 (Frame fields). The format of each of the individual subtypes of each frame type is defined in 8.3 (Format of individual frame types). The components of management frame bodies are defined in 8.4 (Management and Extension frame body components). The formats of Management frames of subtype Action are defined in 8.6 (Action frame format details).

**Instructions to TGah Editor: *Change the subclause below as follows:***

* **Frame Control field**

The general format of the Frame Control field of the short MAC header is illustrated in Figure 8-532b (Frame Control field) except for the least significant octet of the Frame Control field of Short Probe Response frames (defined in 8.7.5.3 (Short Probe Response frame format)) and Short Control frames (defined in 8.7.4 (Short Control frames)).

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|  | B0  B1 | B2 B4 | B5 B7 | B8 | B9 | B10 | B11 | B12 | B13 | B14 | B15 |
|  | Protocol  Version | Type | PTID/Subtype | From  DS | More  Fragments | Power  Management | More  Data | Protected  Frame | End of  Service  Period | Relayed  Frame | Ack Policy |
| Bits: | 2 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * **Frame Control field** | | | | | | | | | | | |

(#662, 13/898r1)

The Protocol Version field is 2 bits in length and is defined in 8.2.4.1.2 (Protocol Version field). For Short frames the value of the protocol version is 1.

The Type field is 3 bits in length and identifies the type of the frame, as defined in Table 8-301a (Short frame types).

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| * **Short frame types (continued)** | |
| **Type** | **Type description** |
| 0 | Data   * Either A1 or A2 is an SID (defined in 8.7.3.2), as determined by the From DS field in the FC field |
| 1 | Management   * Either A1 or A2 is an SID (defined in 8.7.3.2), as determined by the From DS field in the FC field * Both A1 and A2 fields contain MAC addresses for Short Probe Response frames.(#12) |
| 2 | Control   * (#561) A1 is an SID and A2 is either an SID or contains a MAC address. |
| 3 | Data   * Both A1 and A2 fields contain MAC addresses(#18) |
| 4-6 | Reserved |
| 7 | Extension (currently reserved) |

Short frames with Type field value set to 0 define a short data frame where either A1 or A2 field is an SID as indicated in Table 8-301b (From DS values in short frames) and the other A1 or A2 field contains a MAC address. Short frames with Type field value set to 1 define a short management frame where either A1 or A2 field is an SID as indicated in Table 8-301b (From DS values in short frames) and the other A1 or A2 field contains a MAC address except for a Short Probe Response frame for which both A1 and A2 fields contain MAC addresses. Short frames with Type field value set to 2 define short control frames where A1 is an SID and A2 is either an SID or contains a MAC address.(#561) Short frames with Type value set to 3 define a short data frame where both A1 and A2 fields contain MAC addresses.(#18) All other values of the Type field are reserved.

The PTID/Subtype field is 3 bits in length and depending on the type of the Short frame it indicates:

- The 3 LSBs of the TID as defined in 8.2.4.5.2 (TID subfield) for Short Data frames (Type field equal to 0 and 3) transmitted by a QoS STA. In a Short Data frame transmitted by a non-QoS STA this field is equal to 0.

- The Subtype for Short Control frames (Type field equal to 2) as described in 8.7.4 (Short Control frames)

- The Subtype for Short Management frames (Type field equal to 1) as described in 8.7.5 (Short Management frames)

The From DS field is 1 bit in length and, if present, it defines the addressing of short frames with values of the type field less than 2 and equal to 3(#18), as defined in Table 8-301b (From DS values in short frames).

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| * **From DS values in short frames** | | |
| **From DS  field** | **Meaning** | **Use** |
| 0 | A1 contains the MAC address of the receiver  A2 is an SID which contains the AID of the transmitter   * A2 contains the MAC address of the transmitter for Short Data frames with Type field equal to 3   A3 (if present) contains the MAC address of the destination  A4 (if present) contains the MAC address of the source | For frames transmitted by a Non-AP STA to an AP  For frames transmitted from a Non-AP STA to Non-AP STA (direct link) |
| 1 | A1 is an SID which contains the AID of the receiver   * A1 contains the MAC address of the receiver for Short Data frames with Type field equal to 3   A2 is the MAC address of the transmitter  A3 (if present) contains the MAC address of the destination  A4 (if present) contains the MAC address of the source | AP to Non-AP STA |

The More Fragments field is 1 bit in length and is described in 8.2.4.1.5 (More Fragments field).

The Power Management field is 1 bit in length and is described in 8.2.4.1.7 (Power Management field).

The EOSP field is 1 bit in length and is described in 8.2.4.5.3 (EOSP (end of service period) subfield).

The Protected Frame field is 1 bit in length and is described in 8.2.4.1.9 (Protected Frame field).

The More Data field is 1 bit in length and is described in 8.2.4.1.8 (More Data field).

The Relayed Frame field is 1 bit in length and indicates that the current TXOP is shared with the Relay STA using the TXOP sharing procedures for relays described in 9.48.3 (Procedures of TXOP sharing for relay operation). (#119)

The Ack Policy field is 1 bit in length and identifies the acknowledgement policy that is followed upon the delivery of the MPDU, as defined in Table 8-301c (Ack Policy field in the Frame Control field for Short frames).

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| * **Ack Policy field in the Frame Control field for Short frames** | |
| **Ack Policy field** | **Meaning** |
| 0 | Normal Ack or Implicit Block Ack Request.  In a short frame that is a non-A-MPDU frame or VHT single MPDU:  The addressed recipient returns an Ack frame after a short interframe space (SIFS) period, according to the procedures defined in 9.3.2.8 (ACK procedure).  In a short frame that is part of an A-MPDU that is not a VHT single MPDU:  The addressed recipient returns a BlockAck frame, either individually or as part of an A-MPDU starting a SIFS after the PPDU carrying the frame, according to the procedures defined in 9.3.2.9 (Block Ack procedure), 9.22.7.5 (  Generation and transmission of BlockAck by an HT STA), and 9.22.8.3 (Operation of HT-delayed Block Ack).  In a short frame that is a fragment:  When both the originator and the addressed recipient support the Fragment BA procedure, the addressed recipient returns an NDP BlockAck frame after a SIFS period, according to the procedure defined in 9.3.2.9a (Fragment BA procedure).  Ack Policy 0 shall be limited to at most one MU recipient per MU PPDU. |
| 1 | No Ack or Block Ack Policy.  In a short frame that is a non-A-MPDU frame or VHT single MPDU:  The addressed recipient takes no action upon receipt of the frame. More details are provided in 9.23 (No Acknowledgment (No Ack)). The Ack Policy subfield is set to this value in all individually addressed frames in which the sender does not require acknowledgment. The Ack Policy subfield is also set to this value in all group addressed frames. This combination is not used for short Data frames with a TID for which a Block Ack agreement exists.  In a short frame that is part of an A-MPDU frame that is not a VHT single MPDU:  The addressed recipient takes no action upon the receipt of the frame except for recording the state. The recipient can expect a BlockAckReq frame in the future to which it responds using the procedure described in 9.22 (Block Acknowledgment (Block Ack)). |

**Instructions to TGah Editor: *Change the subclause below as follows:***

* **Address fields**

There are up to four address fields in the short MAC frame format. These fields are used to indicate the recipient of the frame (A1), the transmitter of the frame (A2), and optionally the MAC address of the source and/or the MAC address of the destination of the frame (A3 and/or A4).

The recipient of the frame (A1) or the transmitter of the frame (A2) can be identified by the AID subfield located in the Short ID (SID) field depending on the value of the From DS subfield of the Frame Control field as described in 8.7.3.1 (Frame Control field). A group of receiving non-AP STAs of the frame can be identified by the AID subfield with a Multicast ID value, as described in 9.51 (Flexible Multicast), located in the Short ID (SID) field. The length of the SID field is 2 octets and is illustrated in Figure 8-532c (SID field).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 B12 | B13 |  | B14 | B15 |
|  | Association  ID (AID) | A3  Present |  | A4  Present | A-MSDU |
| Bits: | 13 | 1 |  | 1 | 1 |
| * **SID field** | | | | | |

The AID subfield contains an AID as specified in Table 8-301b (From DS values in Short frames) in Short frames of Type 0, 1 and 2. The A3 Present subfield is 1 if the A3 is present in the short MAC header, otherwise it is 0.

The A4 Present subfield is 1 if the A4 is present in the short MAC header, otherwise it is 0.

The A-MSDU subfield is 1 if the MPDU contains a Dynamic A-MSDU as described in 8.7.6 (Dynamic A-MSDU format).

When the A3 field is not present, A3 is either stored at the recipient of the frame or, if an A3 is not stored at the recipient of the frame, A3 is equal to the address identified by A1.

When the A4 field is not present, A4 is either stored at the recipient of the frame or, if an A4 is not stored at the recipient of the frame, A4 is equal to the address identified by A2.

**Instructions to TGah Editor: *Change the subclause below as follows:***

* **Sequence Control field**

The Sequence Control field is 16 bits in length and is present in all Short Data frames and Short Management frames other than Short Probe Response frames and is described in 8.2.4.4. The Sequence Control field is not present in Short Control frames and in Short Probe Response frames.

**Instructions to TGah Editor: *Change the subclause below as follows:***

* **Sending a probe response**

***Insert the following paragraph after the 4th paragraph of the sub-clause 10.1.4.3.3(#868):***

If the requesting STA is an S1G STA and a Probe Response Option element (see Clause 8.4.2.170t (Probe Response Option element)) is included in the Probe Request frame, and if the responding STA is an S1G STA with dot11ShortProbeResponseOptionImplemented equal to true, then the responding S1G STA shall respond with a Short Probe Response frame. Otherwise, the S1G STA that responds to a Probe Request shall transmit a Probe Response frame. If a bit in a Probe Response Option bitmap in the Probe Response Option element is set to 1, it means that corresponding optional information is requested by the requesting S1G STA, and the responding S1G STA with dot11ShortProbeResponseOptionImplemented equal to true shall include the corresponding information in the Short Probe Response frame. If the Request full SSID bit in the Probe Response Option element is set to 1, then the responding S1G STA shall include its full SSID in the Short Probe Response frame. If it is set to 0, then it shall include its compressed SSID instead of the full SSID. In S1G BSS, the (Short) Probe Response frame shall have the same CH\_BANDWIDTH as the preceding Probe Request frame.(#868)

NOTE- This rule does not allow that an S1G AP responds with a Probe Response frame in 1MHz channel width after receiving a Probe Request frame in 2MHz channel width.

***Change the 6-th paragraph of the sub-clause 10.1.4.3.3 as follows:***

Probe Response frames and Short Probe Response frames shall be sent as directed frames to the address of the STA that generated the probe request. The SSID List element shall not be included in a Probe Request frame in an IBSS.

**10.1.4.3.3b NDP Probing** (#868)

**Instructions to TGah Editor: *Change the 3rd paragraph of subclause 10.1.4.3.3b in 802.11ah D1.1 as follows:***

If the Requested Probe Response Type field in the NDP Probe Request frame is set to 0, the responding AP with dot11ShortProbeResponseOptionImplemented equal to true shall respond with a Short Probe Response frame. Otherwise, the AP that responds to an NDP Probe Request shall transmit a Probe Response frame.(#2826)(Ed) When an AP responds with a (short) Probe Response frame, it shall perform the Basic Access procedure as defined in 9.3.4.2. Because a NDP Probe Request frame does not have a MAC Address of STA requesting a NDP Probing, the RA address of the (Short) Probe Response frame shall be broadcast.(#1396)