IEEE P802.11
Wireless LANs

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| LB 200 MAC Comment Resolution on Short Probe Response Option Element (Clause 8.4.2.170t) |
| Date: 2014-04-28 |
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Abstract

This submission proposes comment resolutions on Short Probe Response Option Element (Clause 8.4.2.170t)

* CIDs: 1145, 1146, 1437, 1438, 1639

Changes in the text refer to: Draft P802.11ah/D1.2

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.***

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- |
| 1145 | 118 | 8.4.2.170t | This is not how bitfields are generally described. Tables are sometime used, but only when the size of the structure makes a figure unweildy. Also the table doesn't specifcally say which bit goes where. | Replace table with a bit-oriented figure. Move the descriptive text for each field to paras below the figure introduced "The <name of field> field indicates.."Or add a column indicating bit position.Do the same for the other tables in this subclause. | Revised –TGah Editor to make changes shown in 14/0540 |
| 1146 | 122 | 8.4.2.170t | Don't repeat these rows. | Indicate Bits=4 and have a single reserved row. | Revised –TGah Editor to make changes shown in 14/0540 |
| 1437 | 117 | 8.4.2.170t | The Probe Response Option field includes Request to features that are not currently defined. Once identified which additional features need to be adopted for S1G from VHT add these features to the Draft or remove them from the Probe Response Option bitmaps. | As in comment. | Revised –Probe Response Option bitmaps should be updated to adopt options that may be explicitly requested by the S1G STA reflecting the up to date draft. TGah Editor to make changes shown in 14/0540 |
| 1438 | 123 | 8.4.2.170t | move the normative text to the correct subclause. There should not be any normative text in subclause 8 defined. | as in the comment | Rejected –The sentence does not contain a normative text. It is a field descsdription explaining the meaning of setting a bit in the bitmap. |
| 1639 | 118 | 8.4.2.170t | The default bitmap for a Probe Response should allow a STA to associate, but there's no RSN element for example. | Review contents of default bitmap for Probe Response and add RSN element. | Revised –Agree with the commenter in principle. TGah Editor to make changes shown in 14/0540 |

**Discussion:**

**CID 1145, 1146, and 1438**

See the resolution column in the table.

**CID 1639**

RSN element is necessary for a non-AP STA to be associated with an RSNA AP, so it is very frequently required by the non-AP STA for association. It is better to move it to bitmap 0 (default bitmap).

In 11ah D0.1, non-TIM support field was included in the Extended Capabilities element, so ‘Request Extended Capabilities’ bit is included in bitmap 0, but the non-TIM support field has been moved to S1G Capabilities element and the ‘Extended Capabilties’ does not signal S1G related capabilities. So, ‘Request Extended Capabilities’ bit can be moved to bitmap 2 and ‘Request RSN’ bit can be moved to bitmap 0 instead.

**CID 1437**

Probe Response Option bitmaps should be updated to adopt options that may be explicitly requested by the S1G STA reflecting the up to date draft.

A bit to explicitly request S1G Operation element to be included in the short probe response is missing in the current bitmap definition, so it should be added.

S1G Sector Operation element and Short Beacon Interval element can be included in the short probe response, and bits to explicitly request them should be included in the bitmap.

Since current 11ah draft did not exclude IBSS, we need to include a bit to request IBSS Parameter Set in the bitmap.

The most up to date 802.11 draft is REVmc D2.7, and we should include bits to explicitly request some of the optional elements described in the Table 8-42 (Probe Response frame body).

Optional elements adopted by 11ae, 11aa, 11ad, 11ac, and 11af have been included in the Table 8-42 of REVmc.

A bit to request QMF Policy element (11ae) can be omitted in the Short Probe Response Option element since it is explicitly requested to be included in the probe response by setting QMFActivated subfield in the Extended Capabilities element in the Probe Request.

QLoad Report (11aa), Multi-band and Multiple MAC sublayers element (11ad), and Reduced Neighbor Report (11af) may be also used in 11ah, so bits to request them should be included in the bitmap.

Information elements that are only used by 11ac (VHT Capabilities, VHT Operation, Quiet Channel, etc), 11ad (DMG Capabilities, DMG Operation, Antenna Sector ID Patter, etc), or 11af (TVHT Operation) STAs will not be used by 11ah STAs, so they do not have to be included in the Short Probe Response Option element.

Information elements such as Authentication Control (11ah), Channel Switch Announcement, and Operating Mode Notification (11ac) are not necessary to be included in the Short Probe Response Option element since it is not adequate for a STA to explicitly request these elements. These elements are included in the probe response at the time when an AP determines that it will perform authentication control or channel switch or operating mode change. It is not necessary to include them in the bitmap

DSE registered location element is used only by 11y STAs, so ‘Request DSE registered location’ bit should be removed from the Probe Response Option bitmap.

Clause 8.4.2.5 (CF Parameter Set element) of REVmc says “The PCF mechanism is obsolete. Consequently, this subclause might be removed in a later revision of the standard”. So, it is better to remove ‘Request CF Parameter Set’ bit from the bitmap.

**Proposed Remedy:**

***Instructions to TGah Editor: ChangeTable 8-191h ~ 8-191m in Cluase 8.4.2.170t as follows***

8.4.2.170t Short Probe Response Option element

The Short Probe Response Option element is included in the Probe Request frame to indicate which optional information is requested to be included in the Short Probe Response frame that is transmitted by the responding STAs.

The optional information requested by the STA is indicated as bitmaps in the Short Probe Response Option element. It is also indicated that which bitmap is included in the Short Probe Response Option element.

The format of the Short Probe Response Option element is shown in Figure 8-401dx (Short Probe Response Option element format).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | Probe Response Group bitmap | Probe Response Option bitmap 0 | Probe Response Option bitmap 1 | ... | Probe Response Option bitmap n |
| Octets: | 1 | 1 | 1 | 1 | 1 |  | 1 |
| * Short Probe Response Option element format
 |

The Element ID field is set to the value for Short Probe Response Option element defined in Table 8-55 (Element IDs).

The value of the Length field is the total length of the Probe Response Group bitmap field and Probe Response Option bitmap fields and set to value between 1 and 9 depending on the number of Probe Response Option bitmaps included in the Short Probe Response Option element.

The Probe Response Group bitmap indicates which Probe Response Option bitmap is included in the Short Probe Response Option element. If Probe Response Option bitmap i is included in the Short Probe Response Option element, then i-th bit in the Probe Response Group bitmap is set to 1.

Each Probe Response Option bitmap indicates which optional information is requested to be included in the Short Probe Response frame by the responding STAs.

The optional information requested to be included in the Short Probe Response is categorized into 8 bitmaps (Probe Response Option bitmap 0 ~ 7).

Table 8-191h (Probe Response Option bitmap 0 (Default Bitmap)) ~ Table 8-191m (Probe Response Option bitmap 5) define the Probe Response Option bitmap 0 ~ 5.

NOTE— Probe Response Option bitmap 6 and 7 are reserved for future extension.

|  |  |
| --- | --- |
|  | * Probe Response Option bitmap 0 (Default Bitmap)
 |
| Bit position | Subfield | ~~Bits~~ | ~~Definition~~Meaning | ~~Encoding~~ Definition |
| 0 | Request Full SSID | ~~1~~ | Indicates whether Full SSID or Compressed SSID is requested to be included in the short probe response | Set to 1 to request Full SSID Set to 0 to request Compressed SSID |
| 1 | Request Next TBTT | ~~1~~ | Indicates Next TBTT field is requested to be included in the short probe response | Set to 1 to request Next TBTTSet to 0 otherwise.  |
| 2 | Request Access Network Options | ~~1~~ | Indicates Request Access Network Options field is requested to be included in the short probe response | Set to 1 to request Access Network OptionsSet to 0 otherwise.  |
| 3 | Request Short Beacon Compatibility  | ~~1~~ | Indicates Short Beacon Compatibility element (8.4.2.170g) is requested to be included in the short probe response | Set to 1 to request Short Beacon Compatibility elementSet to 0 otherwise. |
| 4 | Request Supported Rates  | ~~1~~ | Indicates Supported Rates in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Supported Rates.Set to 0 otherwise. |
| 5 | Request S1G Capability | ~~1~~ | Indicates S1G Capabilities element (8.4.2.170k) is requested to be included in the short probe response | Set to 1 to request S1G Capabilities element.Set to 0 otherwise. |
| 6 | ~~Request Extended Capabilities~~Request S1G Operation | ~~1~~ | ~~Indicates Extended Capabilities in Table 8-31 (Probe Response frame body) is requested to be included in the short probe response~~Indicates S1G Operation element (8.4.2.170w) is requested to be included in the short probe response | ~~Set to 1 to request Extended Capabilities.~~~~Set to 0 otherwise.~~Set to 1 to request S1G Operation element.Set to 0 otherwise. |
| 7 | ~~Reserved~~Request RSN | ~~1~~ | ~~Reserved~~Indicates RSN element in Table 8-42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request RSN element.Set to 0 otherwise. |

|  |  |
| --- | --- |
|  | * Probe Response Option bitmap 1
 |
| Bit position | Subfield | ~~Bits~~ | ~~Definition~~Meaning | ~~Encoding~~ Definition |
| 0 | Request RPS | ~~1~~ | Indicates RPS element (8.4.2.170b) is requested to be included in the short probe response | Set to 1 to request RPS elementSet to 0 otherwise.  |
| 1 | Request Page Slice (#Ed)  | ~~1~~ |

|  |
| --- |
| Indicates Page Slice element (8.4.2.170c) is requested to be included in the short probe response |

 |

|  |
| --- |
| Set to 1 to request Page SliceSet to 0 otherwise.  |

 |
| 2 | Request TSF Timer Accuracy | ~~1~~ | Indicates TSF Timer Accuracy element (8.4.2.170n) is requested to be included in the short probe response | Set to 1 to request TSF Timer Accuracy.Set to 0 otherwise.  |
| 3 | Request Relay Discovery | ~~1~~ | Indicates Relay Discovery element (8.4.2.170q) is requested to be included in the short probe response | Set to 1 to request Relay Discovery.Set to 0 otherwise. |
| 4 | Request Relay | ~~1~~ | Indicates Relay element (8.4.2.170o) is requested to be included in the short probe response | Set to 1 to request Relay.Set to 0 otherwise. |
| 5 | ~~Reserved~~Request S1G Sector Operation | ~~1~~ | ~~Reserved~~Indicates S1G Sector Operation element (8.4.2.170f) is requested to be included in the short probe response | Set to 1 to request S1G Sector Operation.Set to 0 otherwise. |
| 6 | ~~Reserved~~Short Beacon Interval | ~~1~~ | ~~Reserved~~Indicates Short Beacon Interval element (8.4.2.170h) is requested to be included in the short probe response | Set to 1 to request Short Beacon Interval.Set to 0 otherwise. |
| 7 | Reserved | ~~1~~ | ~~Reserved~~ |  |

|  |  |
| --- | --- |
|  | * Probe Response Option bitmap 2
 |
| Bit position | Subfield | ~~Bits~~ | ~~Definition~~Meaning | ~~Encoding~~ Definition |
| 0 | Request Country | ~~1~~ | Indicates Country element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Country elementSet to 0 otherwise.  |
| 1 | Request Power Constraint | ~~1~~ | Indicates Power Constraint element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Power ConstraintSet to 0 otherwise.  |
| 2 | Request TPC Report | ~~1~~ | Indicates TPC Report element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request TPC Report.Set to 0 otherwise.  |
| 3 | Request Extended Supported Rates | ~~1~~ | Indicates Extended Supported Rates in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Extended Supported Rates.Set to 0 otherwise. |
| 4 | ~~Request RSN~~Request Extended Capabilities | ~~1~~ | ~~Indicates RSN element in Table 8-31 (Probe Response frame body) is requested to be included in the short probe response~~Indicates Extended Capabilities in Table 8-42 (Probe Response frame body) is requested to be included in the short probe response | ~~Set to 1 to request RSN.~~~~Set to 0 otherwise.~~Set to 1 to request Extended Capabilities.Set to 0 otherwise. |
| 5 | Request BSS Load | ~~1~~ | Indicates BSS Load element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request BSS Load.Set to 0 otherwise. |
| 6 | Request EDCA Parameter Set | ~~1~~ | Indicates EDCA Parameter in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request EDCA Parameter.Set to 0 otherwise. |
| 7 | Request Supported Operating Classes | ~~1~~ | Indicates Supported Operating Classes in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Supported Operating Classes.Set to 0 otherwise. |

|  |  |
| --- | --- |
|  | * Probe Response Option bitmap 3 (continued)
 |
| Bit position | Subfield | ~~Bits~~ | ~~Definition~~Meaning | ~~Encoding~~ Definition |
| 0 | Request Measurement Pilot Transmission | ~~1~~ | Indicates Measurement Pilot Transmission element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Measurement Pilot TransmissionSet to 0 otherwise.  |
| 1 | Request Multiple BSSID | ~~1~~ | Indicates Multiple BSSID element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Multiple BSSIDSet to 0 otherwise.  |
| 2 | Request RM Enabled Capabilities | ~~1~~ | Indicates RM Enabled Capabilities element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request RM Enabled Capabilities.Set to 0 otherwise.  |
| 3 | Request AP Channel Report | ~~1~~ | Indicates AP Channel Report in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request AP Channel Report.Set to 0 otherwise. |
| 4 | Request BSS Average Access Delay | ~~1~~ | Indicates BSS Average Access Delay element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request BSS Average Access Delay.Set to 0 otherwise. |
| 5 | Request Antenna | ~~1~~ | Indicates Antenna element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Antenna.Set to 0 otherwise. |
| 6 | Request BSS Available Admission Capacity | ~~1~~ | Indicates BSS Available Admission Capacity in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request BSS Available Admission Capacity.Set to 0 otherwise. |
| 7 | Request BSS AC Access Delay | ~~1~~ | Indicates BSS AC Access Delay in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request BSS AC Access Delay.Set to 0 otherwise. |

***TGah Editor to remove 2nd and 3rd rows from the Table 8-191l***

 ***Editor to add a new row at the end of the table.***

|  |  |
| --- | --- |
|  | * Probe Response Option bitmap 4 (continued)
 |
| Bit position | Subfield | ~~Bits~~ | ~~Definition~~Meaning | ~~Encoding~~ Definition |
| 0 | Request Mobility Domain | ~~1~~ | Indicates Mobility Domain element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Mobility DomainSet to 0 otherwise.  |
| ~~1~~ | ~~Request DSE registered location~~ | ~~1~~ | ~~Indicates DSE registered location element in Table 8-3142 (Probe Response frame body) is requested to be included in the short probe response~~ | ~~Set to 1 to request DSE registered location~~~~Set to 0 otherwise.~~  |
| ~~2~~ | ~~Request CF Parameter Set~~ | ~~1~~ | ~~Indicates CF Parameter Set element in Table 8-3142 (Probe Response frame body) is requested to be included in the short probe response~~ | ~~Set to 1 to request CF Parameter Set.~~~~Set to 0 otherwise.~~  |
| 1 | Request QoS Traffic Capability | ~~1~~ | Indicates QoS Traffic Capability in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request QoS Traffic Capability.Set to 0 otherwise. |
| 2 | Request Channel Usage | ~~1~~ | Indicates Channel Usage element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Channel Usage.Set to 0 otherwise. |
| 3 | Request Time Advertisement | ~~1~~ | Indicates Time Advertisement element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Time Advertisement.Set to 0 otherwise. |
| 4 | Request Time Zone | ~~1~~ | Indicates Request Time Zone in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Time Zone.Set to 0 otherwise. |
| 5 | ~~Reserved~~Request IBSS Parameter Set | ~~1~~ | ~~Reserved~~Indicates IBSS Parameter Set in Table 8-42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request IBSS Parameter Set.Set to 0 otherwise. |
| 6-7 | Reserved |  |  |  |

|  |  |
| --- | --- |
|  | * Probe Response Option bitmap 5
 |
| Bit position | Subfield | ~~Bits~~ | ~~Definition~~Meaning | ~~Encoding~~ Definition |
| 0 | Request Interworking | ~~1~~ | Indicates Interworking element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request InterworkingSet to 0 otherwise.  |
| 1 | Request Advertisement Protocol | ~~1~~ | Indicates Advertisement Protocol element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Advertisement ProtocolSet to 0 otherwise.  |
| 2 | Request Roaming Consortium | ~~1~~ | Indicates Roaming Consortium element in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Roaming Consortium.Set to 0 otherwise.  |
| 3 | Request Emergency Alert Identifier | ~~1~~ | Indicates Emergency Alert Identifier in Table 8-~~31~~42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Emergency Alert Identifier.Set to 0 otherwise. |
| 4 | ~~Reserved~~Request QLoad Report | ~~1~~ | ~~Reserved~~Indicates QLoad Report element in Table 8-42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request QLoad Report.Set to 0 otherwise. |
| 5 | ~~Reserved~~Request Multi-band | ~~1~~ | ~~Reserved~~Indicates Multi-band element in Table 8-42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Multi-band.Set to 0 otherwise. |
| 6 | ~~Reserved~~ Request Multiple MAC Sublayers | ~~1~~ | ~~Reserved~~Indicates Multiple MAC Sublayers element in Table 8-42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Multiple MAC Sublayers.Set to 0 otherwise. |
| 7 | ~~Reserved~~ Request Reduced Neighbor Report | ~~1~~ | ~~Reserved~~Indicates Reduced Neighbor Report element in Table 8-42 (Probe Response frame body) is requested to be included in the short probe response | Set to 1 to request Reduced Neighbor Report.Set to 0 otherwise. |

Setting a bit in a Probe Response Option bitmap to 1 indicates that the corresponding information is requested to be included in the Short Probe Response frame if the responding STA supports the indicated information.

If the Request full SSID bit in the Probe Response Option bitmap 0 is set to 1, then it indicates that the full SSID of the responding STA is requested to be included in the Short Probe Response frame. If it is set to 0, it indicates that compressed SSID of the responding STA is requested to be included instead of the full SSID.

Only Probe Response Option bitmaps with at least one bit set to 1 is included in the Short Probe Response Option element. The Probe Response Group bitmap field indicates which Probe Response Option bitmap is included in the Short Probe Response Option element. For example, if only Probe Response Option bitmap 0 and 2 have bits that are set to 1, then these two Probe Response Group bitmaps are included in the Short Probe Response Option element and the Probe Response Group bitmap is set to 10100000 to indicate that only the Probe Response Option bitmap 0 and 2 are included in the Short Probe Response Option element.

Probe Response Option bitmap 0 is defined to be a default bitmap that indicates most frequently requested information. If the default bitmap is the only Probe Response Option bitmap that is included in the Short Probe Response Option element, then the Probe Response Group bitmap is omitted. In that case, only Element ID, Length, and the default Probe Response Group bitmap (Probe Response Option bitmap 0) are included in the Short Probe Response Option element.