IEEE P802.11  
Wireless LANs

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| 802.11/D2.0 PICS changes | | | | |
| Date: 2014-04-11 | | | | |
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Abstract

This document proposes changes covering CIDs 127 and 269 on 802.11-2012, regarding the PICS.

## Revision History

r0: Initial revision.

r1: Redone based on D2.0; removed renaming of CFs.

r2: Updated following presentation in Los Angeles.

r3: Updated following non-presentation in Beijing.

## Comments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 127 | Mark RISON | B (1785) | The PICS is very messy (e.g. operator precedence is unclear, use of parentheses is random, use of "AND" v. "&" is random, whether to include "N/A", exactly what it means if there are multiple conditions, exactly what happens if none of the predicates are true, etc.) | Clean up the PICS |
| 269 | Mark RISON |  | The PICS needs a good scrubbing | Scrub vigorously |

## Discussion

It is desirable to canonicalise the syntax, to avoid possible confusion. The use of conditional symbols is not defined clearly, which causes ambiguity which should be addressed. There’s the usual slew of editorial niggles to fix. Cleanliness is next to godliness.

**Aide-mémoire**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Role** | | | | |
| AP |  |  | CF1 | O.1 |
| “Independent STA but not mesh or OCB” |  |  | CF2 | O.1 |
|  | STA of AP |  | CF2.1 |  |
|  | IBSS STA |  | CF2.2 |  |
|  | PBSS STA (11ad) |  | CF2.4 |  |
|  |  | PCP | CF2.4.1 |  |
|  |  | non-PCP PBSS STA | CF2.4.2 |  |
| Infrastructure STA |  |  | CF14 |  |
| MBSS STA (11s) |  |  | CF21 | O.1 |
| OCB STA (11p) |  |  | CF29 | O.1 |
| **PHY** | | | | |
| DSSS (802.11-1997) |  |  | CF4 | O.2 |
| OFDM (11a) |  |  | CF6 | O.2 |
| HR/DSSS (11b) |  |  | CF7 | O.2 |
| ERP (11g) |  |  | CF9 | O.2 |
| HT (11n) |  |  | CF16 | O.2 |
|  | HT in 2G4 band |  | CF16.1 |  |
|  | HT in 5G band |  | CF16.2 |  |
| DMG (11ad) |  |  | CF25 | O.2 |
|  | DMG STA |  | CF27 | O.5 |
|  | non-DMG STA |  | CF28 | O.5 |
| 3G6 band (11y) |  |  | CF15 |  |
| 5G9 band (11p) |  |  | CF17 |  |
| **MAC** | | | | |
| Multidomain (11d) |  |  | CF8 |  |
| Spectrum management (11h) |  |  | CF10 |  |
| Operating classes (11j) |  |  | CF11 |  |
| QoS (11e) |  |  | CF12 |  |
| Radio measurement (11k) |  |  | CF13 |  |
| TDLS (11z) |  |  | CF18 |  |
| WNM (11v) |  |  | CF19 |  |
| Interworking (11u) |  |  | CF20 |  |
| QMF (11ae) |  |  | CF22 |  |
| Robust AVT (11aa) |  |  | CF23 |  |
| Multiband (11ad) |  |  | CF26 |  |

## Proposed changes

The changes are relative to D2.0. The changes are shown using Word change tracking (it may be worth not showing formatting changes, if Word is being more stupid than it usually is). Select “Final Showing Markup” or “Final” as appropriate. Editorial instructions are shown using bold italics; those with “Editor:” prefix are to be effected by the editor before the next draft; those without are to be given as-is in the draft. Any Word comments should be ignored when merging the proposed changes in. <http://cybertext.wordpress.com/2010/06/02/word-jump-to-next-track-change-with-keyboard/> may be helpful as regards efficiently going through the changes.

**Protocol Implementation Conformance Statement (PICS) -proforma**

* **Introduction**
* ***Any occurrences of <year> throughout this clause will be replaced by the year of publication by the IEEE-SA publication editor.***

The supplier of a protocol implementation that is claimed to conform to IEEE Std 802.11-<year> shall complete the following protocol implementation conformance statement (PICS) proforma.

A completed PICS proforma is the PICS for the implementation in question. The PICS is a statement of which capabilities and options of the protocol have been implemented. This annex may not be compatible with operation in any Regulatory Domain or describe combinations of usable features in any Regulatory Domain. The PICS has a number of uses, including use:

* By the protocol implementer, as a checklist to reduce the risk of failure to conform to the standard through oversight;
* By the supplier and acquirer, or potential acquirer, of the implementation, as a detailed indication of the capabilities of the implementation, stated relative to the common basis for understanding provided by the standard PICS proforma;
* By the user, or potential user, of the implementation, as a basis for initially checking the possibility of interworking with another implementation (note that, while interworking is not guaranteed, failure to interwork can often be predicted from incompatible PICS proformas);
* By a protocol tester, as the basis for selecting appropriate tests against which to assess the claim for conformance of the implementation.
* **Abbreviations and special symbols**
* **Symbols for Status column**

M mandatory

O optional

O.<n> optional — Support of at least one of the group of options labeled by the same numeral <n> is required. The scope of the group of options is limited to a single table (i.e., subclause) within the PICS.(#180)

pred: predicate identification

* **General abbreviations for Item and Support columns**

N/A not applicable

AD address functionAVT audio/video transport(11aa)

CF implementation under test (IUT) configuration

DMG-M directional multi-gigabit (DMG) medium access control (MAC) features

DMG-P directional multi-gigabit (DMG) physical layer (PHY) features

DS direct sequence

DSE dynamic station enablement

ERP extended rate physical layer (PHY)(#63)

FR frame reception

FS frame sequence

FT frame transmission

HRDS high rate direct sequence

HTM high throughput(#1533) (HT) medium access control (MAC) features

HTP high throughput(#1533) (HT) physical layer (PHY) features

HWM hybrid wireless mesh protocol (HWMP) path selection protocol

IW interworking with external networks

MD multidomain

MP mesh protocol

OC operating classes

OF orthogonal frequency division multiplexing (OFDM)

PC protocol capability

***Editor: rename RC1-7 to OC1-7 throughout this Annex.***

RM radio management

QB quality-of-service (QoS) base functionality

QD quality-of-service (QoS) enhanced distributed channel access (EDCA)

QMF quality-of-service management frame(11ae)

QP quality-of-service (QoS) hybrid coordination function (HCF) controlled channel access (HCCA)

SM spectrum management

TDLS tunneled direct-link setup

WNM wireless network management

* **Instructions for completing the PICS proforma**
* **General structure of the PICS proforma**

The first parts of the PICS proforma, Implementation identification and Protocol summary, are to be completed as indicated with the information necessary to identify fully both the supplier and the implementation.

The main part of the PICS proforma is a fixed questionnaire, divided into subclauses, each containing a number of individual items. Answers to the questionnaire items are to be provided in the rightmost column, either by simply marking an answer to indicate a restricted choice (usually Yes or No) or by entering a value or a set or a range of values. (Note that there are some items where two or more choices from a set of possible answers may apply. All relevant choices are to be marked in these cases.)

Each item is identified by an item reference in the first column. The second column contains the question to be answered. The third column contains the reference or references to the material that specifies the item in the main body of this standard. The remaining columns record the status of each item, i.e., whether support is mandatory, optional, or conditional, and provide the space for the answers (see also **Error! Reference source not found.**). Marking an item as supported is to be interpreted as a statement that all relevant requirements of the subclauses and normative annexes, cited in the References column for the item, are met by the implementation.

A supplier may also provide, or be required to provide, further information, categorized as either Additional Information or Exception Information. When present, each kind of further information is to be provided in a further subclause of items labeled A<*I*> or X<*I*>, respectively, for cross-referencing purposes, where <*I*> is any unambiguous identification for the item (e.g., simply a numeral). There are no other restrictions on its format or presentation.

A completed PICS proforma, including any Additional Information and Exception Information, is the PICS for the implementation in question.

NOTE—Where an implementation is capable of being configured in more than one way, a single PICS might be able to describe all such configurations. However, the supplier has the choice of providing more than one PICS, each covering some subset of the implementation’s capabilities, if this makes for easier and clearer presentation of the information.

* **Additional information**

Items of Additional Information allow a supplier to provide further information intended to assist in the interpretation of the PICS. It is not intended or expected that a large quantity of information will be supplied, and a PICS can be considered complete without any such information. Examples of such Additional Information might be an outline of the ways in which an (single) implementation can be set up to operate in a variety of environments and configurations, or information about aspects of the implementation that are outside the scope of this standard but have a bearing upon the answers to some items.

References to items of Additional Information may be entered next to any answer in the questionnaire, and may be included in items of Exception Information.

* **Exception information**

It may happen occasionally that a supplier wishes to answer an item with mandatory status (after any conditions have been applied) in a way that conflicts with the indicated requirement. No preprinted answer is found in the Support column for this. Instead, the supplier shall write the missing answer into the Support column, together with an X<*I*> reference to an item of Exception Information, and shall provide the appropriate rationale in the Exception Information item itself.

An implementation for which an Exception Information item is required in this way does not conform to this standard.

NOTE—A possible reason for the situation described above is that a defect in this standard has been reported, a correction for which is expected to change the requirement not met by the implementation.

***Editor: make “this standard” above have the same font size as the rest of the NOTE.***

* **Conditional status**

The PICS proforma contains a number of conditional items. These are items for which both the applicability of the item itself, and its status if it does apply, mandatory or optional, are dependent upon whether certain other items are supported.

Where a group of items is subject to the same condition for applicability, a separate preliminary question about the condition appears at the head of the group, with an instruction to skip to a later point in the questionnaire if the N/A answer is selected. Otherwise, individual conditional items are indicated by one or more conditional symbols in the Status column.

A conditional symbol is of the form “<pred>:<S>” or “O” (or “O.<n>”), where “<pred>” is a predicate as described below, and “<S>” is one of the status symbols “M” or “O” (or “O.<n>”).

If the value of a predicate is true, the conditional symbol is applicable, and yields the status given by S. If any applicable conditional symbol yields mandatory status, the conditional item has mandatory status. Otherwise, if any applicable conditional symbol (including one of the form “O” (or “O.<n>”)) yields optional status, the conditional item has optional status. In either case, the support column is to be completed in the usual way. If no conditional symbol is applicable, the conditional item is not relevant and the N/A answer is to be marked.

A predicate is one of the following:

* An item-reference for an item in the PICS proforma: the value of the predicate is true if the item is marked as supported, and is false otherwise.
* An expression constructed by combining item-references using the boolean operators (in decreasing order of precedence) “NOT”, “AND”, and “OR”, with or without the use of parenthetical groupings: the value of the predicate is true if the expression evaluates to true and is false otherwise.

NOTE—If optional feature F1 requires features F2 and F3, this can be represented in the PICS in one of two ways:

1. The status for conditional items F2 and F3 is “F1:M” and the status for conditional item F1 is “O”, or
2. The status for conditional item F1 is “F2 AND F3:O”.

If feature F1 is required if feature F2 or F3 is supported, and is optional otherwise, this can be represented in the PICS in one way:

1. The status for conditional item F1 is “F2 OR F3:M” and “O”.

If feature F1 is required if feature F2 or F3 is supported, and is not relevant otherwise, this can be represented in the PICS in one way:

1. The status for conditional item F1 is “F2 OR F3:M”.

If feature F1 is required if feature F2 is supported, is optional if feature F3 is supported, and is not relevant otherwise, this can be represented in the PICS in one way:

1. The status for conditional item F1 is “F2:M” and “F3:O”.

Conditional symbols can be given in any order.***Editor: replace all “&”s and “and”s in the Status column of tables in B.4 with “AND”s, adding spaces on the sides where not already present.***

***Editor: replace all “or”s and small-caps “OR”s in the Status column of tables in B.4 with plain “OR”s, adding spaces on the sides where not already present.***

***Editor: replace all “not”s in the Status column of tables in B.4 with “NOT”s, adding a space after where not already present.***

***Editor: delete all commas in the Status column of tables in B.4, replacing them with line breaks where not already followed by one.***

***Editor: remove all spaces after colons in conditional symbols.***

***Editor: ensure the boldness of the tick boxes is the same throughout (compare e.g. CF16.2 and CF17).***

Each item referenced in a predicate, or in a preliminary question for grouped conditional items, is indicated by an asterisk in the Item column.

* **PICS proforma—IEEE Std 802.11-<year>[[1]](#footnote-1)**
* **Implementation identification**

|  |  |
| --- | --- |
| Supplier |  |
| Contact point for queries about the PICS |  |
| Implementation Name(s) and Version(s) |  |
| Other information necessary for full identification, e.g., name(s) and version(s) of the machines and/or operating systems(s), system names |  |

NOTE 1—Only the first three items are required for all implementations. Other information may be completed as appropriate in meeting the requirement for full identification.

NOTE 2—The terms Name and Version need to be interpreted appropriately to correspond with a supplier’s terminology (e.g., Type, Series, Model).

* **Protocol summary**

|  |  |
| --- | --- |
| Identification of protocol standard | IEEE Std 802.11-<year> |
| Identification of amendments and corrigenda to this PICS proforma that have been completed as part of this PICS | Amd. : Corr. :  Amd. : Corr. : |
| Have any exception items been required? (See **Error! Reference source not found.**; the answer Yes means that the implementation does not conform to IEEE Std 802.11-<year>.) | Yes  No  |

|  |  |
| --- | --- |
| Date of statement (yyyy-mm-dd) |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| * **IUT configuration** | | | | |
| **Item** | **IUT configuration** | **References** | **Status** | **Support** |
|  | What is the configuration of the IUT? |  |  |  |
| \* CF1 | Access point (AP) | 4.3 (Components of the IEEE Std 802.11 architecture) | O.1 | Yes  No  |
| \* CF2 | Independent station (neither an AP, nor a mesh STA, nor a STA operating outside the context of a BSS) | 4.3 (Components of the IEEE Std 802.11 architecture) | O.1 | Yes  No  |
| \*CF2.1 | Operation in an infrastructure BSS | 4.3 (Components of the IEEE Std 802.11 architecture) | CF2:M | Yes  No  N/A  |
| \*CF2.2 | Operation in an independent BSS (IBSS) | 4.3 (Components of the IEEE Std 802.11 architecture) | CF2:O | Yes  No  N/A  |
| \*CF29 | Operation outside the context of a BSS (OCB) | 10.21 (STAs communicating Data frames outside the context of a BSS) | O.1, CF17:M | Yes  No  |
| CF2.3 | *Reserved*  ***Editor: replace “CF2.3” with “CF29” throughout this Annex except in this row and move the row above to below the CF28 row.*** |  |  |  |
| \*CF2.4(11ad) | Operation in a personal BSS (PBSS) | 4.3.3 (The personal BSS (PBSS)) | CF2&CF25:O | Yes  No  N/A  |
| \*CF2.4.1(11ad) | Operation as a PCP | 4.3.3 (The personal BSS (PBSS)) | CF2.4:M | Yes  No  N/A  |
| \*CF2.4.2(11ad) | Operation *not* as a PCP | 4.3.3 (The personal BSS (PBSS)) | CF2.4:M | Yes  No  N/A  |
| NOTE—See CF21 for mesh STA and CF29 for OCB operation.(#241) | | | | |
| CF3 | *Reserved*(#63) |  |  |  |
| \* CF4 | Direct sequence spread spectrum (DSSS) PHY | — | O.2  CF7:M(11ad) | Yes  No  |
| CF5 | *Reserved*(#64) |  |  |  |
| \* CF6 | Orthogonal frequency division multiplexing (OFDM) PHY | — | O.2  CF16.2:M(11ad) | Yes  No  |
| \* CF7 | High rate direct sequence spread spectrum (HR/DSSS)(11ad) PHY | — | O.2  CF9:M(11ad) | Yes  No  |
| \* CF8 | Multidomain operation(#179) | (#63)9.19 (Operation across regulatory domains), 10.1.4.5 (Synchronizing with a BSS) | O(#180) | Yes  No  |
| \* CF9 | Extended Rate PHY (ERP) | Clause 19 (Extended Rate PHY (ERP) specification) | O.2  CF16.1:M(11ad) | Yes  No  |
| \* CF10 | Spectrum management(#179) | 8.4.1.4 (Capability Information field), 10.8 (TPC procedures), 10.9 (DFS procedures) | O | Yes  No  |
| \*CF11 | Operating classes(#179) | 8.4.2.10 (Request element), 18.3.8.4.2 (Channel numbering), 18.3.8.6 (Slot time), 18.4.2 (OFDM PHY MIB), Annex D, Annex E | O | Yes  No  |
| \* CF12 | Quality of service (QoS) | 9.20 (HCF), 9.22 (Block Acknowledgment (Block Ack)), 4.3.11 (High throughput (HT) STA), 4.3.16.3 (Mesh STA) | O  CF16 OR CF21 OR CF22 OR CF23 OR  CF25:M(11ad) | Yes  No  |
| \* CF13 | Radio measurement(#179) | 8.4.1.4 (Capability Information field), 10.11 (Radio measurement procedures) | (CF8 AND CF11):O | Yes  No  N/A  |
| \*CF14 | Infrastructure mode(#179) | 4.3.4 (STA membership in a BSS is dynamic) | CF1 OR CF2.1:M | Yes  No  N/A  |
| \*CF15 | 3.65–3.70 GHz band in the United States | 8.4.2.51 (DSE Registered Location element), 10.12 (DSE procedures), 18.3.6 (CCA), 18.3.10.6 (CCA requirements), Annex D, Annex E | CF6&CF8&CF10&CF11:O | Yes  No  N/A  |
| \*CF16 | High throughput(#1533) (HT) PHY | 8.4.2.55 (HT Capabilities element) | O.2 | Yes  No  |
| \* CF16.1(11ad) | HT operation in 2.4 GHz band | Clause 20 (High Throughput (HT) PHY specification) | CF16: O.6 | Yes  No  N/A  |
| \* CF16.2(11ad) | HT operation in 5 GHz band | Clause 20 (High Throughput (HT) PHY specification) | CF16: O.6 | Yes  No  N/A  |
| \*CF17 | 5.9 GHz band | Annex E | CF6:O | Yes  No  N/A  |
| \*CF18 | Tunneled direct-link setup(#179) | 10.23 (Tunneled direct-link setup) | CF2.1:O | Yes  No  N/A  |
| \*CF19 | Wireless network management (WNM) |  | (CF8 & CF11 & CF13):O | Yes  No  N/A  |
| \*CF20 | Interworking with external networks service(#179) | Extended Capabilities  8.4.2.26 (Extended Capabilities element) | O | Yes  No  |
| \*CF21 | Operation in a mesh BSS (MBSS) | 4.3.16 (Mesh BSS: IEEE Std 802.11 wireless mesh network) | O.1 | Yes  No  |
| \*CF22(11ae) | QoS management frame (QMF) policy(#179) | 10.26 (Quality-of-service management frame (QMF)) | O | Yes  No  |
| \*CF23(11aa) | Robust audio/video transport (AVT)(#179) | 4.3.19 (Robust audio video (AV) streaming) | O | Yes  No  |
| CF24 | *Reserved* |  |  |  |
| \* CF25 | Directional multi-gigabit (DMG) PHY | 8.4.2.127 (DMG Capabilities element) | O.2  CF28:M | Yes  No  |
| \* CF26 | Multi-band operation | 8.6.21 (FST Action frame details), 10.32 | At least two of CF4, CF6, CF15, CF17, CF25: O | Yes  No  N/A  |
| \* CF27 | Non-DMG STA |  | O.5 | Yes  No  |
| \* CF28 | DMG STA |  | O.5 | Yes  No  |

* **MAC protocol**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| * **MAC protocol capabilities** | | | | | | | | | |
| **Item** | | **Protocol capability** | | **References** | | **Status** | | **Support** | |
|  | | Are the following MAC protocol capabilities supported? | |  | |  | |  | |
| PC1 | | Authentication service | | 4.5.4.2 (Authentication), 4.5.4.3 (Deauthentication),  11.1 (Framework), 10.21 (STAs communicating Data frames outside the context of a BSS), Annex J | | (CF1 OR CF2.1) & CF27(11ad): M  CF2.2 OR CF28:O | | Yes  No  N/A  | |
| PC1.1 | | Authentication state | | 10.3 (STA authentication and association) | | PC1:M | | Yes  No  | |
| PC1.2 | | Open System authentication | | 11.1.2 (Security methods) | | PC1:M | | Yes  No  | |
| PC1.3 | | Shared Key authentication | | 11.1.3 (RSNA equipment and RSNA capabilities),  11.4 (RSNA confidentiality and integrity protocols) | | PC2:M | | Yes  No  N/A  | |
| \* PC2 | | Wired equivalent privacy (WEP) algorithm This capability is deprecated (applicable only to systems that are backward -compatible). | | 4.5.4.4 (Data confidentiality), 11.2.2 (Wired equivalent privacy (WEP)), Annex J | | O | | Yes  No  | |
| PC2.1 | | WEP encryption procedure | | 11.2.2 (Wired equivalent privacy (WEP)) | | PC2:M | | Yes  No  N/A  | |
| PC2.2 | | WEP decryption procedure | | 11.2.2 (Wired equivalent privacy (WEP)) | | PC2:M | | Yes  No  N/A  | |
| PC3 | | Distributed coordination function (DCF) | | 9.2 (MAC architecture), 9.3 (DCF), Annex J | | M | | Yes  No  | |
| PC3.1 | | Network allocation vector (NAV) -function | | 9.3.2.1 (CS mechanism),  9.3.4 (DCF access procedure),  9.4.3.3 (NAV operation during the CFP) | | M | | Yes  No  | |
| PC3.2 | | Interframe space usage and timing | | 9.3.2.3 (IFS), 9.3.4 (DCF access procedure), 9.3.7 (DCF timing relations) | | M | | Yes  No  | |
| PC3.3 | | Random Backoff function | | 9.3.3 (Random backoff time) | | M | | Yes  No  | |
| PC3.4 | | DCF Access procedure | | 9.3.4.2 (Basic access), 9.3.4.5 (Control of the channel) | | M | | Yes  No  | |
| PC3.5 | | Random Backoff procedure | | 9.3.4.3 (Backoff procedure for DCF) | | M | | Yes  No  | |
| PC3.6 | | Recovery procedures and retransmit limits | | 9.3.4.4 (Recovery procedures and retransmit limits) | | M | | Yes  No  | |
| PC3.7 | | Request to send (RTS)/clear to send (CTS) procedure | | 9.3.2.4 (Setting and resetting the NAV), 9.3.2.5 (RTS/CTS with fragmentation), 9.3.2.6 (CTS and DMG CTS procedure) | | M | | Yes  No  | |
| PC3.8 | | Individually addressed MAC protocol data unit (MPDU) transfer | | 9.3.5 (Individually addressed MPDU transfer procedure) | | M | | Yes  No  | |
| PC3.9 | | Group addressed MPDU transfer | | 9.3.6 (Group addressed MPDU transfer procedure) | | M | | Yes  No  | |
| PC3.10 | | MAC-level acknowledgment | | 9.3.2.2 (MAC-Level Acknowledgments),  9.3.2.8 (Ack procedure) | | M | | Yes  No  | |
| PC3.11 | | Duplicate detection and recovery | | 9.3.2.10 (Duplicate detection and recovery) | | M | | Yes  No  | |
| PC3.12 (#287) | | Dynamic EIFS | | 9.3.7 (DCF timing relations) | | O | | Yes  No  | |
| \* PC4 | | Point coordinator  The PCF mechanism is obsolete. Consequently, this option may be removed in a later revision of the standard.(#150) | | 9.2 (MAC architecture), 9.4 (PCF), Annex J | | (11ad)CF27&CF1:O | | Yes  No  N/A  | |
| PC4.1 | | Maintenance of contention-free period (CFP) structure and timing | | 9.4.2 (CFP structure and timing), 9.4.3 (PCF access procedure) | | PC4:M | | Yes  No  N/A  | |
| PC4.2 | | Point coordination function (PCF) MPDU transfer from point coordinator | | 9.4.4 (PCF transfer procedure) | | PC4:M | | Yes  No  N/A  | |
| \* PC4.3 | | PCF MPDU transfer to point coordinator | | 9.4.4 (PCF transfer procedure) | | PC4:O | | Yes  No  N/A  | |
| PC4.4 | | Overlapping point coordinator provisions | | 9.4.4.3 (Operation with overlapping point-coordinated BSSs) | | PC4:M | | Yes  No  N/A  | |
| PC4.5 | | Polling list maintenance | | 9.4.5 (CF polling list) | | PC4.3:M | | Yes  No  N/A  | |
| \* PC5 | | Contention-free (CF)-Pollable  The PCF mechanism is obsolete. Consequently, this option may be removed in a later revision of the standard.(#150) | | 9.2 (MAC architecture), 9.4 (PCF), Annex J | | (11ad)CF27&CF2.1:O | | Yes  No  N/A  | |
| PC5.1 | | Interpretation of CFP structure and -timing | | 9.4.2 (CFP structure and timing), 9.4.3 (PCF access procedure) | | PC5:M | | Yes  No  N/A  | |
| PC5.2 | | PCF MPDU transfer to/from and CF--Pollable station (STA) | | 9.4.4 (PCF transfer procedure) | | PC5:M | | Yes  No  N/A  | |
| PC5.3 | | Polling list update | | 9.4.5 (CF polling list) | | PC5:M | | Yes  No  N/A  | |
| PC6 | | Fragmentation | | 9.3 (DCF), 9.5 (Fragmentation), Annex J | | M | | Yes  No  | |
| PC7 | | Defragmentation | | 9.3 (DCF), 9.6 (Defragmentation), Annex J | | M | | Yes  No  | |
| PC8 | | MAC data service | | 9.2.8 (MAC data service), 9.8 (MSDU transmission restrictions), Annex J | | M | | Yes  No  | |
| PC8.1 | | ReorderableGroupAddressed   service class | | 9.8 (MSDU transmission restrictions) | | M | | Yes  No  | |
| PC8.2 | | StrictlyOrdered service class  Note that the use of the StrictlyOrdered service class is obsolete and the StrictlyOrdered service class might be removed in a future revision of the standard.(#1465) | | 9.8 (MSDU transmission restrictions) | | O | | Yes  No  | |
| PC9 | | Multirate support | | 9.7 (Multirate support),  Annex J | | M | | Yes  No  | |
| \* PC10 | | Multiple outstanding MAC service data unit (MSDU) support | | 9.8 (MSDU transmission restrictions),  Annex J | | O | | Yes  No  | |
| PC10.1 | | Multiple outstanding MSDU transmission restrictions | | 9.8 (MSDU transmission restrictions) | | PC10:M | | Yes  No  N/A  | |
| PC11 | | Timing synchronization function (TSF) | | 10.1 (Synchronization),  Annex J | | (CF1 OR CF2): M | | Yes  No  | |
| PC11.1 | | Timing in an infrastructure network | | 10.1.2.1 (TSF for infrastructure and PBSS networks), 10.1.5 (Adjusting STA timers) | | CF14:M | | Yes  No  N/A  | |
| PC11.2 | | Timing in an independent basic service set (IBSS) | | 10.1.2.2 (TSF for an IBSS), 10.1.5 (Adjusting STA timers) | | CF2.2:M | | Yes  No  N/A  | |
| PC11.3 | | Beacon generation function | | 10.1.3 (Maintaining synchronization) | | CF1 OR CF2.2 OR CF2.4.1:M | | Yes  No  N/A  | |
| PC11.4 | | TSF synchronization and accuracy | | 10.1.2 (Basic approach), 10.1.3 (Maintaining synchronization) | | (CF1 OR CF2): M | | Yes  No  N/A  | |
| PC11.5 | | Infrastructure basic service set (BSS) initialization | | 10.1.4 (Acquiring synchronization, scanning) | | CF1:M | | Yes  No  N/A  | |
| PC11.6 | | IBSS initialization | | 10.1.4 (Acquiring synchronization, scanning) | | CF2.2:M | | Yes  No  N/A  | |
| PC11.7 | | Passive scanning | | 10.1.4 (Acquiring synchronization, scanning) | | (CF2.1 or CF2.2 or CF2.4.2(11ad)):M | | Yes  No  N/A  | |
| PC11.8 | | Active scanning | | 10.1.4 (Acquiring synchronization, scanning) | | (CF2.1 or CF2.2):M | | Yes  No  N/A  | |
| PC11.9 | | Probe response | | 10.1.4 (Acquiring synchronization, scanning) | | (CF1 OR CF2.2 OR CF2.4.1): M | | Yes  No  N/A  | |
| PC11.10 | | *Reserved*(#63) | |  | |  | |  | |
| PC12 | | Infrastructure power management | | 10.2.2 (Power management in a non-DMG infrastructure network), Annex J | | CF14 and (11ad)CF27:M | | Yes  No  | |
| PC12.1 | | STA power management modes | | 10.2.2.2 (STA Power Management modes), 10.2.2.9 (Receive operation for STAs in PS mode during the CFP) | | (CF2.1 or CF2.2):M | | Yes  No  N/A  | |
| PC12.2 | | Traffic indication map (TIM) -transmission | | 10.2.2.3 (AP TIM transmissions), 10.2.2.4 (TIM types) | | CF1:M | | Yes  No  N/A  | |
| PC12.3 | | AP function during contention period (CP) | | 10.2.2.5 (Power management with APSD) | | CF1:M | | Yes  No  N/A  | |
| PC12.4 | | AP function during CFP | | 10.2.2.6 (AP operation during the CP) | | PC4:M | | Yes  No  N/A  | |
| PC12.5 | | Receive function during CP | | 10.2.2.7 (AP operation during the CFP) | | (CF2.1 or CF2 OR CF21):M | | Yes  No  N/A  | |
| PC12.6 | | Receive function during CFP | | 10.2.2.8 (Receive operation for STAs in PS mode during the CP) | | PC5:M | | Yes  No  N/A  | |
| PC12.7 | | Aging function | | 10.2.2.10 (Receive operation using APSD) | | CF1:M | | Yes  No  N/A  | |
| PC13 | | IBSS power management | | 10.2.3 (Power management in an IBSS), Annex J | | CF2.2:M | | Yes  No  N/A  | |
| PC13.1 | | Initialization of power management | | 10.2.3.3 (Initialization of power management within an IBSS) | | CF2.2:M | | Yes  No  N/A  | |
| PC13.2 | | STA power state transitions | | 10.2.3.4 (STA power state transitions) | | CF2.2:M | | Yes  No  N/A  | |
| PC13.3 | | Announcement traffic indication message (ATIM) and frame transmission | | 10.2.3.5 (ATIM and frame transmission) | | CF2.2 OR CF2.4:M | | Yes  No  N/A  | |
| PC14 | | Association and reassociation | | 4.5 (Overview of the services), 10.3 (STA authentication and association), 10.3.5 (Association, reassociation, and disassociation), 10.21 (STAs communicating Data frames outside the context of a BSS), Annex J | | CF14 OR CF2.4.1: M  CF2.4.2:O | | Yes  No  N/A  | |
| PC14.1 | | Association state | | 10.3.5 (Association, reassociation, and disassociation) | | PC14:M | | Yes  No  N/A  | |
| PC14.2 | | STA association procedure | | 10.3.5.2 (Non-PCP/Non-AP STA association initiation procedures) | | CF2.1:M  CF2.4.2:O | | Yes  No  N/A  | |
| PC14.3 | | AP association procedure | | 10.3.5.3 (PCP/AP association receipt procedures) | | CF1 OR CF2,4,1:M | | Yes  No  N/A  | |
| PC14.4 | | STA reassociation procedure | | 10.3.5.4 (Non-PCP/Non-AP STA reassociation initiation procedures) | | CF2.1:M  CF2.4.2:O | | Yes  No  N/A  | |
| PC14.5 | | AP reassociation procedure | | 10.3.5.5 (PCP/AP reassociation receipt procedures) | | CF1 OR CF2.4.1:M | | Yes  No  N/A  | |
| PC15 | | Management information base (MIB) | | Annex C | | M | | Yes  No  | |
| PC15.1 | | dot11SMTbase, dot11SmtAuthenticationAlgorithms | | Annex C | | M | | Yes  No  | |
| \* PC15.2 | | dot11SMTprivacy | | Annex C | | PC2:M | | Yes  No  N/A  | |
| PC15.3 | | dot11MACbase, dot11CountersGroup, dot11MacGroupAddresses | | Annex C | | M | | Yes  No  | |
| \* PC15.4 | | dot11MACStatistics | | Annex C | | O | | Yes  No  | |
| PC15.5 | | dot11ResourceTypeID | | Annex C | | M | | Yes  No  | |
| PC16 | | Set dot11ShortPreambleOptionImplemented to 1 | | 8.4.1.4 (Capability Information field) | | CF9:M | | Yes  No  N/A  | |
| PC17 | | *Reserved*(#302) | |  | |  | |  | |
| PC18 | | *Reserved*(#300) | |  | |  | |  | |
| PC19 | | *Reserved*(#63) | |  | |  | |  | |
| PC20 | | Set Short Slot Time subfield as described in reference | | 8.4.1.4 (Capability Information field) | | CF9:M | | Yes  No  N/A  | |
| PC21 | | Monitor each received short time slot subfield and take action as described in reference. | | 8.4.1.4 (Capability Information field) | | CF9:M | | Yes  No  N/A  | |
| PC22 | | Transmit the ERP element in each transmitted Beacon or Probe Responses in the format and with content as described in -reference | | 8.4.1.4 (Capability Information field) | | CF9:M | | Yes  No  N/A  | |
| PC23 | | Receive the ERP element and employ a protection mechanism when required prior to transmitting information using ERP-OFDM modulation | | 8.4.1.4 (Capability Information field) | | CF9:M | | Yes  No  N/A  | |
| PC24 | | Determine the value of aCWmin based on the characteristic rate set as described in the -reference | | 9.3.9 (Determination of PLME aCWmin characteristics) | | CF9:M | | Yes  No  N/A  | |
| PC25 | | Transmit control response frames at the -largest basic rates less than equal to the rate received and with the same PHY options or use the highest mandatory rate if no basic rate meets the above criterion | | 9.7 (Multirate support) | | CF9:M | | Yes  No  N/A  | |
| PC26 | | Transmit group addressed frames at a rate contained in the BSSBasicRateSet parameter | | 9.7 (Multirate support) | | CF9:M | | Yes  No  N/A  | |
| PC27 | | Transmit individually addressed frames at any supported rate selected by a rate switching mechanism as long as it is supported by the destination STA | | 9.7 (Multirate support) | | CF9:M | | Yes  No  N/A  | |
| PC28 | | Do not transmit at a data rate higher than the greatest rate in the OperationalRateSet | | 9.7 (Multirate support) | | CF9:M | | Yes  No  N/A  | |
| PC29 | | Use ERP element to control use of protection mechanism as described in the -reference | | 9.24 (Protection mechanisms) | | CF9:M | | Yes  No  N/A  | |
| PC30 | | Updated NAV is long enough to cover frame and any response | | 9.24 (Protection mechanisms) | | CF9:M | | Yes  No  N/A  | |
| PC31 | | Support transmission of CTS-to-self sequence as described in the references | | 9.3.2.11 (NAV distribution) | | CF9:O | | Yes  No  N/A  | |
| PC32 | | Support reception of CTS-to-self sequence as described in the references | | 9.3.2.11 (NAV distribution) | | CF9:M | | Yes  No  N/A  | |
| PC33 | | Update NAV | | 9.24 (Protection mechanisms) | | CF9:M | | Yes  No  N/A  | |
| \* PC34 | | Robust security network association (RSNA) | | 8.3.2.1 (Data frame format), 8.4.1.4 (Capability Information field), 4.5.4.4 (Data confidentiality), 11.8.2 (RSNA frame pseudo-code), 11.8.2.2 (Per-MSDU/Per-A-MSDU Tx pseudo-code), 11.8.2.4 (Per-MPDU Tx pseudo-code), 11.8.2.6 (Per-MPDU Rx pseudo-code), 11.8.2.8 (Per-MSDU/Per-A-MSDU Rx pseudo-code), 10.3.4 (Authentication and deauthentication), 10.3.5 (Association, reassociation, and disassociation), 11.4.3 (CTR with CBC-MAC Protocol (CCMP)) | | O | | Yes  No  | |
| PC34.1 | | RSN element | | 8.4.2.24 (RSNE) | | PC34:M | | Yes  No  N/A  | |
| PC34.1.1 | | Group cipher suite | | 8.4.2.24 (RSNE) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.2 | | Pairwise cipher suite list | | 8.4.2.24 (RSNE) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.2.1 | | Counter mode with Cipher-block chaining Message authentication code Protocol (CCMP) data confidentiality protocol | | 11.4.3 (CTR with CBC-MAC Protocol (CCMP)) | | PC34:M | | Yes  No  N/A  | |
| PC34.1.2.1.1 | | CCMP cryptographic encapsulation procedure | | 11.4.3.3 (CCMP cryptographic encapsulation) | | PC34.1.2.1:M | | Yes  No  N/A  | |
| PC34.1.2.1.2 | | CCMP decapsulation procedure | | 11.4.3.4 (CCMP decapsulation) | | PC34.1.2.1:M | | Yes  No  N/A  | |
| PC34.1.2.2 | | Temporal key integrity protocol(#1190) (TKIP) data confidentiality protocol | | 11.4.2 (Temporal key integrity protocol (TKIP)) | | PC34:O | | Yes  No  N/A  | |
| PC34.1.2.2.1 | | TKIP cryptographic encapsulation procedure | | 11.4.2.1.2 (TKIP cryptographic encapsulation) | | PC34.1.2.2:M | | Yes  No  N/A  | |
| PC34.1.2.2.2 | | TKIP decapsulation procedure | | 11.4.2.1.3 (TKIP decapsulation) | | PC34.1.2.2:M | | Yes  No  N/A  | |
| PC34.1.2.2.3 | | TKIP countermeasures | | 11.4.2.4 (TKIP countermeasures procedures) | | PC34.1.2.2:M | | Yes  No  N/A  | |
| PC34.1.2.2.4 | | TKIP security services management | | 11.4.2.3 (TKIP MIC) | | PC34.1.2.2:M | | Yes  No  N/A  | |
| PC34.1.2.3(11ad) | | Galois/Counter Mode with GMAC Protocol (GCMP) data confidentiality protocol | | 11.4.5 (GCM with Galois Message Authentication Code (GMAC) Protocol (GCMP)) | | (CF25 and PC34):M | | Yes  No  N/A  | |
| \*PC34.1.3 | | Authentication key management (AKM) suite list | | 8.4.2.24 (RSNE), 11.4.1 (Overview) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.3.1 | | IEEE Std(#130) 802.1X-defined/RSNA key management | | 8.4.2.24 (RSNE) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.3.2 | | Preshared key (PSK)/ RSNA key management | | 8.4.2.24 (RSNE) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.3.3 | | RSNA key management | | 11.6 (Keys and key distribution) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.3.3.1 | | Key hierarchy | | 11.6 (Keys and key distribution), 11.7 (Mapping EAPOL keys to IEEE Std 802.11 keys) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.3.3.1.1 | | Pairwise key hierarchy | | 11.6.1.3 (Pairwise key hierarchy) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.3.3.1.2 | | Group key hierarchy | | 11.6.1.4 (Group key hierarchy) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.3.3.2 | | 4-Way Handshake | | 11.6.6 (4-Way Handshake) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.3.3.3 | | Group Key Handshake | | 11.6.7 (Group Key Handshake) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.4 | | RSN capabilities | | 8.4.2.24 (RSNE), 11.1.3 (RSNA equipment and RSNA capabilities) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.5 | | RSNA preauthentication | | 11.5.10.2 (Preauthentication and RSNA key management) | | PC34.1:O | | Yes  No  N/A  | |
| PC34.1.6 | | RSNA security association -management | | 11.5 (RSNA security association management) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.7 | | RSNA pairwise master key security -association (PMKSA) caching | | 11.5.1 (Security associations), 11.5.10.3 (Cached PMKSAs and RSNA key management) | | PC34.1:M | | Yes  No  N/A  | |
| PC34.1.8 | | RSNA extended service set (ESS) | | 11.5.10 (RSNA authentication in an ESS), 11.5.14 (RSNA key management in an ESS) | | (PC34.1 and CF1):M | | Yes  No  N/A  | |
| PC34.1.8.1 | | RSNA PeerKey Handshake | | 11.6.8 (PeerKey Handshake) | | PC34.1.8:O | | Yes  No  N/A  | |
| PC34.1.9 | | RSNA IBSS | | 11.5.5 (RSNA policy selection in an IBSS and for DLS), 11.5.11 (RSNA authentication in an IBSS), 11.5.15 (RSNA key management in an IBSS) | | (PC34.1 and CF2.2):O | | Yes  No  N/A  | |
| \*PC 34.1.10 | | Management frame protection | | 8.4.1.11 (Action field), 8.6.3 (QoS Action frame details), 8.2.4.1.10 (Order field), 8.4.2.24.4 (RSN capabilities), 11.4.2.1.2 (TKIP cryptographic encapsulation), 11.4.2.1.3 (TKIP decapsulation), 11.4.2.2 (TKIP MPDU formats), 11.2.3.3.5 (Shared Key authentication (final frame)), 11.4.3.3.3 (Construct AAD), 11.4.3.3.6 (CCM originator processing), 11.4.3.4.2 (CCM recipient processing), 11.4.3.4.4 (PN and replay detection), 11.5.3 (RSNA policy selection in an ESS), 11.8.2.3 (Per-MMPDU Tx pseudo-code), 11.8.2.5 (Per-MPDU Tx pseudo-code for MMPDU), 11.8.2.7 (Per-MPDU Rx pseudo-code for an MMPDU), 11.8.2.9 (Per-MMPDU Rx pseudo-code) | | PC34:O | | Yes  No  N/A  | |
| \*PC 34.1.10.1 | | BIP | | 11.4.4 (Broadcast/Multicast Integrity Protocol (BIP)), Clause 10 (MLME) | | PC34.1.10:M | | Yes  No  N/A  | |
| PC 34.1.10.1.1 | | Management MIC element | | 8.4.2.54 (Management MIC element) | | PC34.1.10.1:M | | Yes  No  N/A  | |
| PC 34.1.11 | | AKM: IEEE Std(#130) 802.1X authentication with SHA-256 PRF | | 8.4.2.24 (RSNE), 11.6 (Keys and key distribution) | | PC34:O | | Yes  No  N/A  | |
| PC 34.1.12 | | AKM: PSK with SHA-256 PRF | | 8.4.2.24 (RSNE), 11.6 (Keys and key distribution) | | PC34:O | | Yes  No  N/A  | |
| PC34.1.13(11ad) | | RSNA rekeying | | 11.5.21 (RSNA rekeying) | | PC34:O | | Yes  No  N/A  | |
| PC34.1.14(11ad) | | Multi-band RSNA | | 11.5.22 (Multi-band RSNA) | | CF26&PC34:M | | Yes  No  N/A  | |
| \*PC35 | | Fast basic service set (BSS) transition (FT) | | Clause 12 (Fast BSS transition) | | CF14:O | | Yes  No  N/A  | |
| PC35.1 | | Mobility Domain element (MDE) | | 8.4.2.46 (Mobility Domain element (MDE)) | | PC35:M | | Yes  No  N/A  | |
| PC35.2 | | Fast basic service set (BSS) Transition element (FTE) | | 8.4.2.47 (Fast BSS Transition element (FTE)) | | PC35&PC34:M | | Yes  No  N/A  | |
| PC35.3 | | Timeout Interval element (TIE) | | 8.4.2.48 (Timeout Interval element (TIE)) | | PC35:M | | Yes  No  N/A  | |
| PC35.4 | | Fast basic service set (BSS) Transition (FT) authentication algorithm | | 8.4.1.1 (Authentication Algorithm Number field) | | PC35:M | | Yes  No  N/A  | |
| PC35.5 | | Fast basic service set (BSS) Transition (FT) Action frames | | 8.6.9 (FT Action frame details) | | PC35:M | | Yes  No  N/A  | |
| PC35.6 | | Fast basic service set (BSS) Transition (FT) key management based on IEEE Std(#130) 802.1X | | 11.6.1.7 (FT key hierarchy), 8.4.2.24 (RSNE) | | PC35&PC34:M | | Yes  No  N/A  | |
| PC35.7 | | Fast basic service set (BSS) Transition (FT) key management based on preshared keys (PSKs) | | 11.6.1.7 (FT key hierarchy), 8.4.2.24 (RSNE) | | PC35&PC34:M | | Yes  No  N/A  | |
| PC35.8 | | Fast basic service set (BSS) Transition (FT) key hierarchy | | 11.6.1.7 (FT key hierarchy) | | PC35&PC34:M | | Yes  No  N/A  | |
| PC35.9 | | FT initial mobility domain association | | 12.4 (FT initial mobility domain association) | | PC35&PC34:M | | Yes  No  N/A  | |
| PC35.10 | | Fast Basic Service Set (BSS) Transition (FT) Protocol | | 12.5 (FT Protocol) | | PC35:M | | Yes  No  N/A  | |
| PC35.10.1 | | Fast Basic Service Set (BSS) Transition (FT) Protocol in robust security network (RSN) | | 12.5.2 (Over-the-air FT Protocol authentication in an RSN), 12.5.3 (Over-the-DS FT Protocol authentication in an RSN), 12.7.1 (FT reassociation in an RSN) | | PC35&PC34:M | | Yes  No  N/A  | |
| PC35.10.2 | | Fast Basic Service Set (BSS) Transition (FT) Protocol in nonrobust security network (non-RSN) | | 12.5.4 (Over-the-air FT Protocol authentication in a non-RSN), 12.5.5 (Over-the-DS FT Protocol authentication in a non-RSN), 12.7.2 (FT reassociation in a non-RSN) | | PC35:M | | Yes  No  N/A  | |
| \*PC35.11 | | Fast Basic Service Set (BSS) Transition (FT) Resource Request Protocol | | 12.6 (FT Resource Request Protocol) | | PC35:O | | Yes  No  N/A  | |
| PC35.11.1 | | Resource Request protocol over the air | | 12.6.2 (Over-the-air fast BSS transition with resource request) | | PC35.11:M | | Yes  No  N/A  | |
| PC35.11.2 | | Resource Request protocol over the distribution system (DS) | | 12.6.3 (Over-the-DS fast BSS transition with resource request), 12.10 (Remote request broker (RRB) communication) | | PC35.11:M | | Yes  No  N/A  | |
| PC35.12 | | QoS procedures for fast basic service set (BSS) transition | | 12.11 (Resource request procedures) | | (CF12& PC35 or CF25&PC35(11ad)):M | | Yes  No  N/A  | |
| \*PC35.13 | | Resource Information Container (RIC) Data element (RDE) | | 12.11 (Resource request procedures), 8.4.2.49 (RIC Data element (RDE)) | | PC35:M | | Yes  No  N/A  | |
| PC35.13.1 | | Resource Request Procedures at the fast basic service set (BSS) transition originator (FTO) | | 12.11.3.1 (FTO procedures) | | PC35.13:M | | Yes  No  N/A  | |
| PC35.13.2 | | Resource Request Procedures at the target access point (AP) | | 12.11.3.2 (AP procedures) | | PC35.13:M | | Yes  No  N/A  | |
| \*PC35.14 | | Remote Request Procedures at the current access point (AP) | | 12.10 (Remote request broker (RRB) communication) | | PC35:M | | Yes  No  N/A  | |
| PC35.14.1 | | Remote Request/Response frame support | | 12.10.3 (Remote Request/Response frame definition) | | PC35.14:O | | Yes  No  N/A  | |
| PC35.14.2 | | Vendor-specific remote request broker (RRB) mechanism | | 12.10.3 (Remote Request/Response frame definition) | | PC35.14:O | | Yes  No  N/A  | |
| PC36 | | SA Query Procedure | | 8.6.10 (SA Query Action frame details), 10.3 (STA authentication and association) | | PC34.1.10:M | | Yes  No  N/A  | |
| \*PC37 | | Power save multi-poll (PSMP) | | 8.6.12.4 (PSMP frame format), 9.27 (PSMP Operation) | | CF27:(11ad)O | | Yes  No  | |
| \*PC37.1 | | Scheduled PSMP | | 8.4.2.29 (TSPEC element), 10.4.6 (PSMP management) | | PC37:M | | Yes  No  N/A  | |
| PC37.1.1 | | PSMP additions to TSPEC | | 8.4.2.29 (TSPEC element) | | PC37.1:M | | Yes  No  N/A  | |
| PC37.1.2 | | AP role in scheduled PSMP sequence | | 9.27.2.2 (PSMP downlink transmission (PSMP-DTT)), 9.27.2.3 (PSMP uplink transmission (PSMP-UTT)) | | (PC37.1 and CF1):M | | Yes  No  N/A  | |
| PC37.1.3 | | STA role in scheduled PSMP sequence | | 9.27.2.2 (PSMP downlink transmission (PSMP-DTT)),  9.27.2.3 (PSMP uplink transmission (PSMP-UTT)) | | (PC37.1 and CF2):M | | Yes  No  N/A  | |
| \*PC37.2 | | Unscheduled PSMP | | 9.27.4 (Unscheduled PSMP) | | PC37:M | | Yes  No  N/A  | |
| PC37.2.1 | | PSMP additions to TSPEC | | 8.4.2.29 (TSPEC element) | | (CF1 and PC37.2):M  (CF2 and PC37.2):O | | Yes  No  N/A  | |
| PC37.3 | | Creation, scheduling, and transmission of PSMP frame | | 8.6.12.4 (PSMP frame format), 9.27.2.1 (PSMP frame transmission (PSMP-DTT and PSMP-UTT)) | | (PC37 and CF1):M | | Yes  No  N/A  | |
| PC37.4 | | Reception and interpretation of PSMP frame | | 8.6.12.4 (PSMP frame format) | | (PC37 and CF2):M | | Yes  No  N/A  | |
| PC37.5 | | Multi-TID Block Ack rules in PSMP sequence | | 8.3.1.8.5 (Multi-TID BlockAckReq variant), 8.3.1.9.4 (Multi-TID BlockAck variant), 9.27.2.7 (PSMP acknowledgment rules), 10.17.2 (Operation at a PCO active AP) | | PC37: M | | Yes  No  N/A  | |
| PC37.6 | | Multi-phase PSMP | | 9.27.2.5 (Resource allocation within a PSMP burst) | | PC37:M | | Yes  No  N/A  | |
| PC38 | | dot11OCBActivated is false when STA is a BSS member | | 10.21 (STAs communicating Data frames outside the context of a BSS) | | (CF2.1 or CF2.2): M | | Yes  No  N/A  | |
| PC39 | | Simultaneous authentication of equals (SAE) | | 11.3 (Authentication using a password) | | CF21:M | | Yes  No  N/A  | |
| \*PC40(11ad)? | | Multi-band Operation  ***Surely should be an option for more than just a DMG sta*** | | 10.33 (Multi-band operation) | | CF26:O | | Yes  No  N/A  | |
| \*PC40.1(11ad) | | FST Setup***Why is this dependent on SAE, which is a mesh feature. Ditto for PC40\*.*** | | 10.33.2.1 (General), 10.33.2.2 (Transitioning between states), 8.4.2.137 (Multi-band element), 8.6.21.2 (FST Setup Request frame format), 8.6.21.3 (FST Setup Response frame format), 8.6.21.5 (FST Ack Request frame format), 8.6.21.6 (FST Ack Response frame format), 8.4.2.150 (Quiet Period Response element), 8.4.2.151 (BeamLink Maintenance element) | | PC39:M | | Yes  No  N/A  | |
| PC40.2(11ad) | | FST TS switching | | 10.33.2.3 (FST TS switching), 8.6.3.2.2 (DMG ADDTS Request frame variant), 8.6.3.3.2 (DMG ADDTS Response frame variant), 8.6.3.4 (DELTS frame format), 8.6.5.2 (ADDBA Request frame format), 8.6.5.3 (ADDBA Response frame format), 8.6.5.4 (DELBA frame format), 8.4.2.29 (TSPEC element), 8.4.2.140 (PCP Handover element ) | | PC39.1:M | | Yes  No  N/A  | |
| PC40.3(11ad) | | FST Tear Down | |  | |  | |  | |
| PC40.3.1(11ad) | | Transmission of FST Tear Down | | 10.33.3 (FST teardown), 8.6.21.4 (FST Tear Down frame format) | | PC39.1:O | | Yes  No  N/A  | |
| PC40.3.2(11ad) | | Reception of FST Tear Down | | 10.33.3 (FST teardown), 8.6.21.4 (FST Tear Down frame format) | | PC39.1:M | | Yes  No  N/A  | |
| PC41(11ad) | | MMSL cluster operation | | 10.34 (MMSL cluster operation) | | O | | Yes  No  N/A  | |
| PC42(11ad) | | Quieting adjacent BSS operation | | 10.37 (Quieting adjacent DMG BSSs) | | O | | Yes  No  N/A  | |
| * **MAC frames** | | | | | | | | |
| **Item** | **MAC frame** | | **References** | | **Status** | | **Support** | |
|  | Is transmission of the following MAC frames supported? | | Clause 8 (Frame formats), Annex J | |  | |  | |
| FT1 | Association (#100)Request | | Clause 8 (Frame formats) | | CF2.1:M  CF2.4.2:O(11ad) | | Yes  No  N/A  | |
| FT2 | Association (#100)Response | | Clause 8 (Frame formats) | | (CF1 OR CF2.4.1)(11ad):M | | Yes  No  N/A  | |
| FT3 | Reassociation (#100)Request | | Clause 8 (Frame formats) | | CF2.1:M  CF2.4.2:O(11ad) | | Yes  No  N/A  | |
| FT4 | Reassociation #100)Response | | Clause 8 (Frame formats) | | (CF1 OR CF2.4.1)(11ad):M | | Yes  No  N/A  | |
| FT5 | Probe (#100)Request | | Clause 8 (Frame formats) | | (CF2.1 or CF2.2 OR CF2.4.2 OR CF21(11ad)):M | | Yes  No  N/A  | |
| FT6 | Probe #100)Response | | Clause 8 (Frame formats) | | (CF1 OR CF2.2 OR CF2.4.1 OR CF21):M | | Yes  No  N/A  | |
| FT7 | Beacon***Insertion by .11ad creates new requirement for CF2.3 STAs. ditto other entries with this Status.*** | | Clause 8 (Frame formats) | | (CF1 OR CF2.2 OR CF21) AND CF27:M  (11ad) | | Yes  No  N/A  | |
| FT8 | ATIM | | Clause 8 (Frame formats) | | (CF2.2 OR CF2.4(11ad)):M | | Yes  No  N/A  | |
| FT9 | Disassociation | | Clause 8 (Frame formats) | | (CF14): M  CF2.4:O(11ad) | | Yes  No  N/A  | |
| FT10 | Authentication | | Clause 8 (Frame formats) | | (CF1 OR CF2.1): M  CF2.2 OR CF 2.4:O(11ad) | | Yes  No  N/A  | |
| FT11 | Deauthentication | | Clause 8 (Frame formats) | | (CF1 OR CF2.1): M  CF2.2 OR CF2.4:O(11ad) | | Yes  No  N/A  | |
| FT12 | Power save (PS)-Poll | | Clause 8 (Frame formats) | | (11ad)CF2.1:M | | Yes  No  N/A  | |
| FT13 | RTS | | Clause 8 (Frame formats) | | M | | Yes  No  | |
| FT14 | CTS | | Clause 8 (Frame formats) | | CF27:(11ad)M | | Yes  No  N/A  | |
| FT15 | Acknowledgment ((#1198)Ack) | | Clause 8 (Frame formats) | | M | | Yes  No  | |
| FT16 | CF-End | | Clause 8 (Frame formats) | | (11ad)PC4:M  O(11ad) | | Yes  No  | |
| FT17 | CF End+CF-Ack | | Clause 8 (Frame formats) | | CF27&(11ad)PC4:M | | Yes  No  N/A  | |
| FT18 | Data | | Clause 8 (Frame formats) | | CF27:(11ad)M | | Yes  No  | |
| FT19 | Data + CF-Ack | | Clause 8 (Frame formats) | | CF27&(11ad)(PC4 or PC5):M | | Yes  No  N/A  | |
| FT20 | Data + CF-Poll | | Clause 8 (Frame formats) | | CF27&(11ad)PC4.3:M | | Yes  No  N/A  | |
| FT21 | Data + CF-Ack+CF-Poll | | Clause 8 (Frame formats) | | CF27&(11ad)PC4.3:M | | Yes  No  N/A  | |
| FT22 | Null | | Clause 8 (Frame formats) | | CF27:(11ad)M | | Yes  No  | |
| FT23 | CF-Ack (no data) | | Clause 8 (Frame formats) | | CF27&(11ad)(PC4 or PC5):M | | Yes  No  N/A  | |
| FT24 | CF-Poll (no data) | | Clause 8 (Frame formats) | | CF27&(11ad)PC4.3:M | | Yes  No  N/A  | |
| FT25 | CF-Ack+CF-Poll (no data) | | Clause 8 (Frame formats) | | CF27&(11ad)PC4.3:M | | Yes  No  N/A  | |
| FT26 | Timing Advertisement frame | | Clause 8 (Frame formats) | | O | | Yes  No  | |
| FT27(11ad) | QoS Data | | Clause 8 (Frame formats) | | CF12:M | | Yes  No  N/A  | |
| FT28(11ad) | QoS Null (no data) | | Clause 8 (Frame formats) | | CF12:M | | Yes  No  N/A  | |
| FT29(11ad) | BlockAckReq | | Clause 8 (Frame formats) | | CF12:O | | Yes  No  N/A  | |
| FT30(11ad) | BlockAck | | Clause 8 (Frame formats) | | CF12:O  HTM3.1:M | | Yes  No  N/A  | |
| FT31(11ad) | Poll | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FT32(11ad) | SPR | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FT33(11ad) | Grant | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FT34(11ad) | DMG CTS | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FT35(11ad) | DMG DTS | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FT36(11ad) | SSW | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FT37(11ad) | SSW-Feedback | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FT38(11ad) | SSW-(#1198)Ack | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FT39(11ad) | DMG Beacon | | Clause 8 (Frame formats) | | (CF1 OR CF2.2 OR CF2.4.1) AND CF28:M | | Yes  No  N/A  | |
|  | Is reception of the following MAC frames supported? | | Clause 8 (Frame formats), Annex J | |  | |  | |
| FR1 | Association (#100)Request | | Clause 8 (Frame formats) | | (CF1 OR CF2.4.1(11ad)):M | | Yes  No  N/A  | |
| FR2 | Association #100)Response | | Clause 8 (Frame formats) | | (CF2.1 OR CF2.4.2(11ad)):M | | Yes  No  N/A  | |
| FR3 | Reassociation (#100)Request | | Clause 8 (Frame formats) | | (CF1 OR CF2.4.1(11ad)):M | | Yes  No  N/A  | |
| FR4 | Reassociation #100)Response | | Clause 8 (Frame formats) | | (CF2.1 OR CF2.4.2(11ad)):M | | Yes  No  N/A  | |
| FR5 | Probe (#100)Request | | Clause 8 (Frame formats) | | (CF1 OR CF2.2 OR CF2.4.1 OR CF21): M | | Yes  No  N/A  | |
| FR6 | Probe #100)Response | | Clause 8 (Frame formats) | | (CF2.1 OR CF2.2 OR CF2.4.2 OR CF21): M | | Yes  No  N/A  | |
| FR7 | Beacon | | Clause 8 (Frame formats) | | (CF2.1 OR CF2.2 OR CF21) AND CF27: M  (11ad) | | Yes  No  N/A  | |
| FR8 | ATIM | | Clause 8 (Frame formats) | | (CF2.2 OR CF2.4):M | | Yes  No  N/A  | |
| FR9 | Disassociation | | Clause 8 (Frame formats) | | (CF14): M  CF2.4:O | | Yes  No  N/A  | |
| FR10 | Authentication | | Clause 8 (Frame formats) | | (CF1 OR CF2.1): M  CF2.2 OR CF 2.4:O(11ad) | | Yes  No  N/A  | |
| FR11 | Deauthentication | | Clause 8 (Frame formats) | | (CF1 OR CF2.1): M  CF2.2 OR CF 2.4:M(11ad) | | Yes  No  N/A  | |
| FR12 | PS-Poll | | Clause 8 (Frame formats) | | (11ad)CF1:M | | Yes  No  N/A  | |
| FR13 | RTS | | Clause 8 (Frame formats) | | M | | Yes  No  | |
| FR14 | CTS | | Clause 8 (Frame formats) | | CF27:(11ad)M | | Yes  No  N/A  | |
| FR15 | (#1198)Ack | | Clause 8 (Frame formats) | | M | | Yes  No  | |
| FR16 | CF-End | | Clause 8 (Frame formats) | | (not CF2.3): M  (11ad) | | Yes  No  N/A  | |
| FR17 | CF End+CF-Ack | | Clause 8 (Frame formats) | | CF27 AND PC4:M(11ad) | | Yes  No  N/A  | |
| FR18 | Data | | Clause 8 (Frame formats) | | CF27:(11ad)M | | Yes  No  N/A  | |
| FR19 | Data + CF-Ack | | Clause 8 (Frame formats) | | CF27&(PC4 OR PC5):M(11ad) | | Yes  No  N/A  | |
| FR20 | Data + CF-Poll | | Clause 8 (Frame formats) | | CF27&(11ad)PC5:M | | Yes  No  N/A  | |
| FR21 | Data + CF-Ack+CF-Poll | | Clause 8 (Frame formats) | | CF27&(11ad)PC5:M | | Yes  No  N/A  | |
| FR22 | Null | | Clause 8 (Frame formats) | | CF27:(11ad)M | | Yes  No  | |
| FR23 | CF-Ack (no data) | | Clause 8 (Frame formats) | | CF27&(11ad)(PC4 or PC5):M | | Yes  No  N/A  | |
| FR24 | CF-Poll (no data) | | Clause 8 (Frame formats) | | CF27&(11ad)PC5:M | | Yes  No  N/A  | |
| FR25 | CF-Ack+CF-Poll (no data) | | Clause 8 (Frame formats) | | CF27&(11ad)PC5:M | | Yes  No  N/A  | |
| FR26 | Timing Advertisement frame | | Clause 8 (Frame formats) | | O | | Yes  No  | |
| FR27(11ad) | QoS Data | | Clause 8 (Frame formats) | | CF12:M | | Yes  No  N/A  | |
| FR28(11ad) | QoS Null (no data) | | Clause 8 (Frame formats) | | CF12:M | | Yes  No  N/A  | |
| FR29(11ad) | BlockAckReq | | Clause 8 (Frame formats) | | CF12:O  HTM3.1:M | | Yes  No  N/A  | |
| FR30(11ad) | BlockAck | | Clause 8 (Frame formats) | | CF12:O  HTM3.5:M | | Yes  No  N/A  | |
| FR31(11ad) | Poll | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FR32(11ad) | SPR | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FR33(11ad) | Grant | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FR34(11ad) | DMG CTS | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FR35(11ad) | DMG DTS | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FR36(11ad) | *Reserved* | |  | |  | |  | |
| FR37(11ad) | SSW | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FR38(11ad) | SSW-Feedback | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FR39(11ad) | SSW-(#1198)Ack | | Clause 8 (Frame formats) | | CF28:M | | Yes  No  N/A  | |
| FR40(11ad) | DMG Beacon | | Clause 8 (Frame formats) | | (CF2.1 OR CF2.2 OR CF2.4.2) AND CF28:M | | Yes  No  N/A  | |

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| * **Frame exchange sequences** | | | | |
| **Item** | **Frame exchange sequence** | **References** | **Status** | **Support** |
|  | Are the following frame sequences  supported? |  |  |  |
| FS1 | Basic frame sequences | 9.3.2.5 (RTS/CTS with fragmentation), 9.3.2.6 (CTS and DMG CTS procedure), 9.3.5 (Individually addressed MPDU transfer procedure), 9.3.6 (Group addressed MPDU transfer procedure), 9.3.2.8 (Ack procedure), 9.4.3 (PCF access procedure) | M | Yes  No  |
| FS2 | CF-Frame sequences | 9.4.3 (PCF access procedure), 9.4.4 (PCF transfer procedure) | (PC4 or PC5):M | Yes  No  N/A  |

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| * **MAC addressing functions** | | | | |
| **Item** | **MAC Address function** | **References** | **Status** | **Support** |
|  | Are the following MAC Addressing functions supported? |  |  |  |
| AD1 | STA universal individual IEEE 802 address | 8.2.4.3 (Address fields) | M | Yes  No  |
| AD2 | BSS identification (BSSID) -generation | 8.2.4.3 (Address fields), 10.1.4 (Acquiring synchronization, scanning), Annex J | M | Yes  No  |
| AD3 | Receive address matching | 8.2.4.3 (Address fields), 8.3.2.1 (Data frame format), Annex J | M | Yes  No  |
| AD4 | Wildcard BSSID | 8.2.4.3.4 (BSSID field), 8.3.2 (Data frames) | CF2.3:M | Yes  No  N/A  |
| AD5 | MAC and PHY operation resumes with appropriate MIB attributes in less than 2 TU | 10.21 (STAs communicating Data frames outside the context of a BSS) | CF2.3:M | Yes  No  N/A  |
| AD6 | Group addressed Mesh Data frame addressing (3 address frame) | 8.2.3 (General frame format), 8.2.4.1 (Frame Control field), 8.2.4.3 (Address fields), 9.33.3 (Frame addressing in an MBSS) | CF21:M | Yes  No  N/A  |
| AD7 | Individually addressed Mesh Data frame addressing (4 address frame) | 8.2.3 (General frame format), 8.2.4.1 (Frame Control field), 8.2.4.3 (Address fields), 9.33.3 (Frame addressing in an MBSS) | CF21:M | Yes  No  N/A  |
| AD8 | Proxied group addressed Mesh Data frame addressing (4 address frame) | 8.2.3 (General frame format), 8.2.4.1 (Frame Control field), 8.2.4.3 (Address fields), 8.2.4.7.3 (Mesh Control field), 9.33.3 (Frame addressing in an MBSS) | CF21:M | Yes  No  N/A  |
| AD9 | Proxied individually addressed Mesh Data frame addressing (6 address frame) | 8.2.3 (General frame format), 8.2.4.1 (Frame Control field), 8.2.4.3 (Address fields), 8.2.4.7.3 (Mesh Control field), 9.33.3 (Frame addressing in an MBSS) | CF21:M | Yes  No  N/A  |
| AD10 | Multihop Action frame addressing (4 address frame) | 8.2.3 (General frame format), 8.2.4.1 (Frame Control field), 8.2.4.3 (Address fields), 8.2.4.7.3 (Mesh Control field), 8.6.18 (Multihop Action frame details), 9.33.3 (Frame addressing in an MBSS) | CF21:M | Yes  No  N/A  |
| AD11 | TA filtering for mesh STA | 8.2.4.3 (Address fields), 8.3.2.1 (Data frame format), 9.33.3 (Frame addressing in an MBSS) | CF21:M | Yes  No  N/A  |

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| * **Direct sequence PHY functions** | | | | |
| **Item** | **PHY feature** | **References** | **Status** | **Support** |
|  | PHY(#61) sublayer procedures | 16.3 (DSSS PHY) |  |  |
| DS1 | Preamble prepend on transmit (TX) | 16.3.1 (Overview) | M | Yes  No  |
| DS1.1 | PHY(#61) frame format | 16.3.2 (PPDU format), 16.3.3 (PHY field definitions) | M | Yes  No  |
| DS1.2 | PHY(#61) integrity check generation | 16.3.3 (PHY field definitions), 16.3.3.7 (PHY CRC field) | M | Yes  No  |
| DS1.3 | TX rate change capability | 16.2.3.4 (RXVECTOR SIGNAL), 16.3.5 (PHY data modulation and modulation rate change) | M | Yes  No  |
| DS1.4 | Supported data rates | 16.1 (Overview), 16.2.3.4 (RXVECTOR SIGNAL) | M | Yes  No  |
| DS1.5 | Data whitener scrambler | 16.3.4 (PHY/DSSS PHY data scrambler and descrambler) | M | Yes  No  |
| DS1.6 | Scrambler initialization | 16.3.4 (PHY/DSSS PHY data scrambler and descrambler) | M | Yes  No  |
| DS2 | Preamble process on receive (RX) | 16.3.1 (Overview) |  |  |
| DS2.1 | PHY(#61) frame format | 16.3.2 (PPDU format), 16.3.3 (PHY field definitions) | M | Yes  No  |
| DS2.2 | PHY(#61) integrity check verify | 16.3.3 (PHY field definitions), 16.3.3.7 (PHY CRC field) | M | Yes  No  |
| DS2.3 | RX Rate change capability | 16.2.3.4 (RXVECTOR SIGNAL), 16.3.5 (PHY data modulation and modulation rate change) | M | Yes  No  |
| DS2.4 | Data whitener descrambler | 16.3.4 (PHY/DSSS PHY data scrambler and descrambler) | M | Yes  No  |
| DS3 | Pseudonoise (PN) code sequence | 16.4.4.4 (Spreading sequence) | M | Yes  No  |
| DS4 | Chipping continue on power-down | 16.3.6 (Transmit PHY) | O | Yes  No  |
| \*DS5 | Operating channel capability | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) |  |  |
| \* DS5.1 | North America (FCC) | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5:O.1 | Yes  No  N/A  |
| DS5.1.1 | Channel 1 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.1:M | Yes  No  N/A  |
| DS5.1.2 | Channel 2 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.1:M | Yes  No  N/A  |
| DS5.1.3 | Channel 3 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.1:M | Yes  No  N/A  |
| DS5.1.4 | Channel 4 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.1:M | Yes  No  N/A  |
| DS5.1.5 | Channel 5 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.1:M | Yes  No  N/A  |
| DS5.1.6 | Channel 6 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.1:M | Yes  No  N/A  |
| DS5.1.7 | Channel 7 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.1:M | Yes  No  N/A  |
| DS5.1.8 | Channel 8 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.1:M | Yes  No  N/A  |
| DS5.1.9 | Channel 9 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.1:M | Yes  No  N/A  |
| DS5.1.10 | Channel 10 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.1:M | Yes  No  N/A  |
| DS5.1.11 | Channel 11 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.1:M | Yes  No  N/A  |
| \* DS5.2 | Canada (IC) | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5:O.1 | Yes  No  N/A  |
| DS5.2.1 | Channel 1 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.2:M | Yes  No  N/A  |
| DS5.2.2 | Channel 2 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.2:M | Yes  No  N/A  |
| DS5.2.3 | Channel 3 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.2:M | Yes  No  N/A  |
| DS5.2.4 | Channel 4 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.2:M | Yes  No  N/A  |
| DS5.2.5 | Channel 5 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.2:M | Yes  No  N/A  |
| DS5.2.6 | Channel 6 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.2:M | Yes  No  N/A  |
| DS5.2.7 | Channel 7 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.2:M | Yes  No  N/A  |
| DS5.2.8 | Channel 8 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.2:M | Yes  No  N/A  |
| DS5.2.9 | Channel 9 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.2:M | Yes  No  N/A  |
| DS5.2.10 | Channel 10 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.2:M | Yes  No  N/A  |
| DS5.2.11 | Channel 11 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.2:M | Yes  No  N/A  |
| \* DS5.3 | Europe (ETSI) | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5:O.1 | Yes  No  N/A  |
| DS5.3.1 | Channel 1 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| DS5.3.2 | Channel 2 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| DS5.3.3 | Channel 3 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| DS5.3.4 | Channel 4 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| DS5.3.5 | Channel 5 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| DS5.3.6 | Channel 6 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| DS5.3.7 | Channel 7 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| DS5.3.8 | Channel 8 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| DS5.3.9 | Channel 9 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| DS5.3.10 | Channel 10 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| DS5.3.11 | Channel 11 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| DS5.3.12 | Channel 12 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| DS5.3.13 | Channel 13 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.3:M | Yes  No  N/A  |
| \* DS5.4 | France | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5:O.1 | Yes  No  N/A  |
| DS5.4.1 | Channel 10 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.4:M | Yes  No  N/A  |
| DS5.4.2 | Channel 11 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.4:M | Yes  No  N/A  |
| DS5.4.3 | Channel 12 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.4:M | Yes  No  N/A  |
| DS5.4.4 | Channel 13 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.4:M | Yes  No  N/A  |
| \* DS5.5 | Spain | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5:O.1 | Yes  No  N/A  |
| DS5.5.1 | Channel 10 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.5:M | Yes  No  N/A  |
| DS5.5.2 | Channel 11 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.5:M | Yes  No  N/A  |
| \* DS5.6 | Japan | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5:O.1 | Yes  No  N/A  |
| \* DS5.7 | China | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5:O.1 | Yes  No  N/A  |
| DS5.7.1 | Channel 1 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS5.7.2 | Channel 2 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS5.7.3 | Channel 3 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS5.7.4 | Channel 4 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS5.7.5 | Channel 5 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS5.7.6 | Channel 6 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS5.7.7 | Channel 7 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS5.7.8 | Channel 8 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS5.7.9 | Channel 9 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS5.7.10 | Channel 10 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS5.7.11 | Channel 11 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS5.7.12 | Channel 12 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS5.7.13 | Channel 13 | 16.3.6 (Transmit PHY), 16.4.4.3 (Channel Numbering of operating channels) | DS5.7:M | Yes  No  N/A  |
| DS6 | Bits to symbol mapping | 16.4.4.5 (Modulation and channel data rates) |  |  |
| DS6.1 | 1 Mb/s | 16.4.4.5 (Modulation and channel data rates) | M | Yes  No  |
| DS6.2 | 2 Mb/s | 16.4.4.5 (Modulation and channel data rates) | M | Yes  No  |
| \*DS7 | CCA functionality | 16.4.6.5 (CCA) |  |  |
| DS7.1 | Energy Only (RSSI above threshold) | 16.4.6.5 (CCA) | DS7:O.2 | Yes  No  N/A  |
| DS7.2 | IEEE Std(#130) 802.11 DSSS correlation | 16.4.6.5 (CCA) | DS7:O.2 | Yes  No  N/A  |
| DS7.3 | Both methods | 16.4.6.5 (CCA) | DS7:O.2 | Yes  No  N/A  |
| DS7.4 | Hold CCA busy for packet duration of a correctly received PPDU(#61) but carrier lost during reception of MPDU | 16.3.7 (Receive PHY) | M | Yes  No  |
| DS7.5 | Hold CCA busy for packet duration of a correctly received but out of specifi-cation PPDU(#61) | 16.3.7 (Receive PHY) | M | Yes  No  |
| DS8 | Transmit antenna selection |  | O | Yes  No  |
| DS9 | Receive antenna diversity | 16.2.3.8 (RXVECTOR RX\_ANTENNA)(#61) | O | Yes  No  |
| \*DS10 | Antenna connector(#1410)(s) availability | 16.4.4.10 (Transmit and receive antenna connector impedance) | O | Yes  No  |
| DS10.1 | 50 (#175) impedance | 16.4.4.10 (Transmit and receive antenna connector impedance) | DS10:M | Yes  No  N/A  |
| \*DS11 | Transmit power level support | (#61)16.4.5.4 (Transmit power level control) | O | Yes  No  |
| DS11.1 | If greater than 100 mW capability | 16.4.5.4 (Transmit power level control) | DS11:M | Yes  No  N/A  |
| DS12 | Spurious emissions conformance | 16.4.4.6 (Transmit and receive in-band and out-of-band spurious emissions) | M | Yes  No  |
| DS13 | TX-to-RX turnaround time | 16.4.4.7 (TX-to-RX turnaround time) | M | Yes  No  |
| DS14 | RX-to-TX turnaround time | 16.4.4.8 (RX-to-TX turnaround time) | M | Yes  No  |
| DS15 | Slot time | 16.4.4.9 (Slot time) | M | Yes  No  |
| DS16 | Energy detection (ED) reporting time | 16.4.4.9 (Slot time), 16.4.6.5 (CCA) | M | Yes  No  |
| DS17 | Minimum transmit power level | 16.4.5.3 (Minimum transmitted power level) | M | Yes  No  |
| DS18 | Transmit spectral mask conformance | 16.4.5.5 (Transmit spectrum mask) | M | Yes  No  |
| DS19 | Transmitted center frequency  tolerance | 16.4.5.6 (Transmit center frequency tolerance) | M | Yes  No  |
| DS20 | Chip clock frequency tolerance | 16.4.5.7 (Chip clock frequency tolerance) | M | Yes  No  |
| DS21 | Transmit power-on ramp | 16.4.5.8 (Transmit power-on and power-down ramp) | M | Yes  No  |
| DS22 | Transmit power-down ramp | 16.4.5.8 (Transmit power-on and power-down ramp) | M | Yes  No  |
| DS23 | Radio frequency (RF) carrier -suppression | 16.4.5.9 (RF carrier suppression) | M | Yes  No  |
| DS24 | Transmit modulation accuracy | 16.4.5.10 (Transmit modulation accuracy) | M | Yes  No  |
| DS25 | Receiver minimum input level  sensitivity | 16.4.6.2 (Receiver minimum input level sensitivity) | M | Yes  No  |
| DS26 | Receiver maximum input level | 16.4.6.3 (Receiver maximum input level) | M | Yes  No  |
| DS27 | Receiver adjacent channel rejection | 16.4.6.4 (Receiver adjacent channel rejection) | M | Yes  No  |
| DS28 | MIB | 16.4.2 (DSSS PHY MIB),  Annex C | M | Yes  No  |
| DS28.1 | dot11PhyDSSSComplianceGroup, dot11PhyRegDomainsSupportGroup, and dot11PhyOperationComplianceGroup | 16.4.2 (DSSS PHY MIB) | M | Yes  No  |

(#63)(#64)

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| * **OFDM PHY functions** | | | | |
| **Item** | **Feature** | **References** | **Status** | **Support** |
| **OF1: OFDM PHY Specific Service Parameters** | | | | |
| OF1.1 | TXVECTOR parameter: LENGTH | 18.2.2.2 (TXVECTOR LENGTH) | M | Yes  No  |
| OF1.2 | TXVECTOR parameter: DATARATE | 18.2.2.3 (TXVECTOR DATARATE) | M | Yes  No  |
| OF1.2.1 | DATARATE = 6.0 Mb/s | 18.2.2.3 (TXVECTOR DATARATE) | M | Yes  No  |
| \*OF1.2.2 | DATARATE = 9.0 Mb/s | 18.2.2.3 (TXVECTOR DATARATE) | O | Yes  No  |
| OF1.2.3 | DATARATE = 12.0 Mb/s | 18.2.2.3 (TXVECTOR DATARATE) | M | Yes  No  |
| \*OF1.2.4 | DATARATE = 18.0 Mb/s | 18.2.2.3 (TXVECTOR DATARATE) | O | Yes  No  |
| \*OF1.2.5 | DATARATE = 24.0 Mb/s | 18.2.2.3 (TXVECTOR DATARATE), Annex E | (NOT CF15):M, CF15:O | Yes  No  |
| \*OF1.2.6 | DATARATE = 36.0 Mb/s | 18.2.2.3 (TXVECTOR DATARATE) | O | Yes  No  |
| \*OF1.2.7 | DATARATE = 48.0 Mb/s | 18.2.2.3 (TXVECTOR DATARATE) | O | Yes  No  |
| \*OF1.2.8 | DATARATE = 54.0 Mb/s | 18.2.2.3 (TXVECTOR DATARATE) | O | Yes  No  |
| OF1.3 | TXVECTOR parameter: SERVICE | 18.2.2.4 (TXVECTOR SERVICE) | M | Yes  No  |
| OF1.4 | TXVECTOR parameter: TXPWR\_LEVEL | 18.2.2.5 (TXVECTOR TXPWR\_LEVEL) | M | Yes  No  |
| OF1.5 | RXVECTOR parameter: LENGTH | 18.2.3.2 (RXVECTOR LENGTH) | M | Yes  No  |
| OF1.6 | RXVECTOR parameter: RSSI | 18.2.3.3 (RXVECTOR RSSI) | M | Yes  No  |
| \*OF1.7 | 10 MHz Channel spacing | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE), Annex E | CF11:O, CF15&DSE2:M | Yes  No  N/A  |
| \*OF1.7.1 | DATARATE = 3 Mb/s  (10 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.7:M | Yes  No  N/A  |
| \*OF1.7.2 | DATARATE = 4.5 Mb/s (10 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.7:O | Yes  No  N/A  |
| \*OF1.7.3 | DATARATE = 6 Mb/s  (10 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.7:M | Yes  No  N/A  |
| \*OF1.7.4 | DATARATE = 9 Mb/s  (10 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.7:O | Yes  No  N/A  |
| \*OF1.7.5 | DATARATE = 12 Mb/s  (10 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.7:M | Yes  No  N/A  |
| \*OF1.7.6 | DATARATE = 18 Mb/s  (10 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.7:O | Yes  No  N/A  |
| \*OF1.7.7 | DATARATE = 24 Mb/s  (10 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.7:O | Yes  No  N/A  |
| \*OF1.7.8 | DATARATE = 27 Mb/s  (10 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.7:O | Yes  No  N/A  |
| \*OF1.8 | 5 MHz Channel spacing | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE), Annex E | CF11:O, CF15&DSE2:M, CF15&DSE3:M | Yes  No  N/A  |
| \*OF1.8.1 | DATARATE = 1.5 (#258)Mb/s  (5 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.8:M | Yes  No  N/A  |
| \*OF1.8.2 | DATARATE = 2.25 Mb/s (5 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.8:O | Yes  No  N/A  |
| \*OF1.8.3 | DATARATE = 3 (#258)Mb/s  (5 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.8:M | Yes  No  N/A  |
| \*OF1.8.4 | DATARATE = 4.5 Mb/s  (5 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.8:O | Yes  No  N/A  |
| \*OF1.8.5 | DATARATE = 6 Mb/s  (5 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.8:M | Yes  No  N/A  |
| \*OF1.8.6 | DATARATE = 9 Mb/s  (5 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.8:O | Yes  No  N/A  |
| \*OF1.8.7 | DATARATE = 12 Mb/s  (5 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.8:O | Yes  No  N/A  |
| \*OF1.8.8 | DATARATE = 13.5 Mb/s  (5 MHz channel spacing) | 18.2.2 (TXVECTOR parameters), 18.2.3 (RXVECTOR parameters), 18.2.3.4 (DATARATE) | CF11& OF1.8:O | Yes  No  N/A  |
| **OF2: OFDM PHY(#61) Sublayer** | | | | |
| OF2.1 | RATE-dependent parameters | 18.3.2.3 (Modulation-dependent parameters) | M | Yes  No  |
| OF2.2 | Timing related parameters | 18.3.2.4 (Timing related parameters) | M | Yes  No  |
| OF2.3 | PHY(#61) preamble: SYNC | 18.3.3 (PHY preamble (SYNC)) | M | Yes  No  |
| OF2.4 | PHY(#61) header: SIGNAL | 18.3.4 (SIGNAL field) | M | Yes  No  |
| OF2.5 | PHY(#61) header: LENGTH | 18.3.4.2 (RATE field) | M | Yes  No  |
| OF2.6 | PHY(#61) header: RATE | 18.3.4.3 (PHY LENGTH field) | M | Yes  No  |
| OF2.7 | PHY(#61) header: parity, reserve | 18.3.4.4 (Parity (P), Reserved (R), and SIGNAL TAIL fields) | M | Yes  No  |
| OF2.8 | PHY(#61) header: SIGNAL TAIL | 18.3.4.4 (Parity (P), Reserved (R), and SIGNAL TAIL fields) | M | Yes  No  |
| OF2.9 | PHY(#61) header: SERVICE | 18.3.5.2 (SERVICE field) | M | Yes  No  |
| OF2.10 | PHY(#61) protocol data unit (PPDU): TAIL | 18.3.5.3 (PPDU TAIL field) | M | Yes  No  |
| OF2.11 | PPDU: PAD | 18.3.5.4 (Pad bits (PAD)) | M | Yes  No  |
| OF2.12 | PHY(#61)/OFDM PHY data scrambler  and descrambler | 18.3.5.5 (PHY DATA scrambler and descrambler) | M | Yes  No  |
| OF2.13 | Convolutional encoder | 18.3.5.6 (Convolutional encoder) | M | Yes  No  |
| OF2.13.1 | Rate R = 1/2 | 18.3.5.6 (Convolutional encoder) | M | Yes  No  |
| OF2.13.2 | Punctured coding R = 2/3 | 18.3.5.6 (Convolutional encoder) | OF1.2.7:M | Yes  No  N/A  |
| OF2.13.3 | Punctured coding R = 3/4 | 18.3.5.6 (Convolutional encoder) | OF1.2.2 OR OF1.2.4 OR OF1.2.6 OR OF1.2.8:M | Yes  No  N/A  |
| OF2.14 | Data interleaving | 18.3.5.7 (Data interleaving) | M | Yes  No  |
| OF2.15 | Subcarrier modulation mapping | 18.3.5.8 (Subcarrier modulation mapping) | M | Yes  No  |
| OF2.15.1 | Binary phase shift keying (BPSK) | 18.3.5.8 (Subcarrier modulation mapping) | M | Yes  No  |
| OF2.15.2 | Quadrature phase shift keying (QPSK) | 18.3.5.8 (Subcarrier modulation mapping) | M | Yes  No  |
| OF2.15.3 | 16-quadrature amplitude modulation (QAM) | 18.3.5.8 (Subcarrier modulation mapping) | M | Yes  No  |
| OF2.15.4 | 64-QAM | 18.3.5.8 (Subcarrier modulation mapping) | OF1.2.7 OR OF1.2.8:M | Yes  No  N/A  |
| OF2.16 | Pilot subcarriers | 18.3.5.9 (Pilot subcarriers) | M | Yes  No  |
| OF2.17 | OFDM modulation | 18.3.5.10 (OFDM modulation) | M | Yes  No  |
| OF2.18 | Packet duration calculation |  | M | Yes  No  |
| OF2.19 | CCA |  |  |  |
| OF2.19.1 | CCA: RSSI | 18.3.6 (CCA) | M | Yes  No  |
| OF2.19.2 | CCA: indication to MAC sublayer | 18.3.6 (CCA) | M | Yes  No  |
| \*OF2.19.3 | CCA-ED functionality | 18.3.10.6 (CCA requirements) | CF15:M | Yes  No  N/A  |
| OF2.19.3.1 | CCA-ED energy only (RPI above threshold) | 18.3.10.6 (CCA requirements) | OF2.19.3:M | Yes  No  N/A  |
| OF2.19.3.2 | Hold CCA busy for packet duration of a correctly received PPDU(#61), but carrier lost during reception of MPDU | 18.3.10.6 (CCA requirements) | OF2.19.3:M | Yes  No  N/A  |
| OF2.20 | PHY(#61) data modulation and modulation rate change | 18.3.7 (PHY data modulation and modulation rate change) | M | Yes  No  |
| OF2.21 | Modulation-dependent parameters  (10 MHz channel spacing) | 18.3.2.3 (Modulation-dependent parameters) | CF11& OF1.7:M | Yes  No  N/A  |
| OF2.22 | Timing-related parameters  (10 MHz channel spacing) | 18.3.2.4 (Timing related parameters) | CF11& OF1.7:M | Yes  No  N/A  |
| OF2.23 | PHY(#61) header: RATE  (10 MHz channel spacing) | 18.3.4.2 (RATE field) | CF11& OF1.7:M | Yes  No  N/A  |
| OF2.24 | Modulation-dependent parameters  (5 MHz channel spacing) | 18.3.2.3 (Modulation-dependent parameters) | CF11& OF1.8:M | Yes  No  N/A  |
| OF2.25 | Timing-related parameters  (5 MHz channel spacing) | 18.3.2.4 (Timing related parameters) | CF11& OF1.8:M | Yes  No  N/A  |
| OF2.26 | PHY(#61) header: RATE  (5 MHz channel spacing) | 18.3.4.2 (RATE field) | CF11& OF1.8:M | Yes  No  N/A  |
| **OF3: PDM Operating Specification General** | | | | |
| OF3.1 | Occupied channel bandwidth |  |  |  |
| OF3.1.1 | 20 MHz channel spacing | 18.3.8.2 (Outline description) | M | Yes  No  |
| OF3.1.2 | 10 MHz channel spacing | 18.3.8.2 (Outline description) | CF11& OF1.7:M | Yes  No  N/A  |
| OF3.1.3 | 5 MHz channel spacing | 18.3.8.2 (Outline description) | CF11& OF1.8:M | Yes  No  N/A  |
| OF3.2 | Operating frequency range | 18.3.8.4.1 (Operating frequency range) |  |  |
| \*OF3.2.1 | 4.9 GHz band | Annex E | CF11:O | Yes  No  N/A  |
| \*OF3.2.2 | 5.0 GHz band | Annex E | CF11:M | Yes  No  N/A  |
| OF3.2.3 | 5.15–5.25 GHz band | 18.3.8.4 (Operating channel frequencies) | O.1 | Yes  No  |
| OF3.2.4 | 5.25–5.35 GHz band | 18.3.8.4 (Operating channel frequencies) | O.1 | Yes  No  |
| \*OF3.2.5 | 5.47–5.725 GHz band | Annex E | CF10:M | Yes  No  N/A  |
| OF3.2.6 | 5.725–5.85 GHz band | 18.3.8.4 (Operating channel frequencies) | O.1 | Yes  No  |
| \*OF3.2.7 | 3.65–3.70 GHz band | Annex D, Annex E | CF15:M | Yes  No  N/A  |
| OF3.2.8 | 5.9 GHz band | Annex E | CF17:M | Yes  No  N/A  |
| OF3.3 | Channelization |  |  |  |
| OF3.3.1 | 5.15–5.25 GHz (20 MHz channel spacing) | Annex E | O.1 | Yes  No  |
| OF3.3.2 | 5.25–5.35 GHz (20 MHz channel spacing) | Annex E | O.1 | Yes  No  |
| OF3.3.3 | 5.725–5.825 GHz (20 MHz channel spacing) | Annex E | O.1 | Yes  No  |
| OF3.3.4 | 5.15–5.25 GHz band in Japan (20 MHz channel spacing) | Annex E | CF11:M | Yes  No  N/A  |
| OF3.3.5 | 5.47–5.725 GHz (20 MHz channel spacing) | Annex E | CF10& OF3.2.5:M | Yes  No  N/A  |
| OF3.3.6 | 5.725–5.85 GHz (20 MHz channel spacing) | Annex E | O.1 | Yes  No  |
| OF3.3.7 | 4.9 GHz band (20 MHz channel spacing) | Annex E | CF11& OF3.2.1:M | Yes  No  N/A  |
| OF3.3.8 | 5.0 GHz band (20 MHz channel spacing) | Annex E | CF11& OF3.2.2:M | Yes  No  N/A  |
| OF3.3.9 | 4.9 GHz band (10 MHz channel spacing) | Annex E | CF11& OF3.2.1& OF1.7:M | Yes  No  N/A  |
| OF3.3.10 | 5.0 GHz band (10 MHz channel spacing) | Annex E | CF11& OF3.2.2& OF1.7:M | Yes  No  N/A  |
| OF3.3.11 | 4.9 GHz band (5 MHz channel spacing) | Annex E | CF11& OF3.2.1& OF1.8:M | Yes  No  N/A  |
| OF3.3.12 | 5.0 GHz band (5 MHz channel spacing) | Annex E | CF11& OF3.2.2& OF1.8:M | Yes  No  N/A  |
| OF3.3.13 | 3.65–3.70 GHz (20 MHz channel spacing) | Annex E | CF15&OF3.2.7:M | Yes  No  N/A  |
| OF3.3.14 | 3.65–3.70 GHz (10 MHz channel spacing) | Annex E | CF15&OF3.2.7&OF1.7:M | Yes  No  N/A  |
| OF3.3.15 | 3.65–3.70 GHz (5 MHz channel spacing) | Annex E | CF15&OF3.2.7&OF1.8:M | Yes  No  N/A  |
| OF3.3.16 | 5.9 GHz band (10 MHz channel spacing) | Annex E | CF17:O | Yes  No  N/A  |
| OF3.3.17 | 5.9 GHz band (20 MHz channel spacing) | Annex E | CF17:O | Yes  No  N/A  |
| OF3.3.18 | 5.9 GHz band (5 MHz channel spacing) | Annex E | CF17:O | Yes  No  N/A  |
| OF3.4 | Number of operating channels | Annex E | M | Yes  No  |
| OF3.5 | Operating channel frequencies | Annex E | M | Yes  No  |
| OF3.6 | Transmit and receive in band and out of band spurious emission | Annex E | M | Yes  No  |
| OF3.6.1 | Interference-limited areas, 4.9 GHz band (20 MHz channel spacing) | Annex E | CF11& OF3.2.1:M | Yes  No  N/A  |
| OF3.6.2 | Interference-limited areas, 5.0 GHz band (20 MHz channel spacing) | Annex E | CF11& OF3.2.2:M | Yes  No  N/A  |
| OF3.6.3 | Interference-limited areas, 4.9 GHz band (10 MHz channel spacing) | Annex E | CF11& OF3.2.1& OF1.7:O | Yes  No  N/A  |
| OF3.6.4 | Interference-limited areas, 5.0 GHz band (10 MHz channel spacing) | Annex E | CF11& OF3.2.2& OF1.7:O | Yes  No  N/A  |
| OF3.6.5 | Interference-limited areas, 4.9 GHz band (5 MHz channel spacing) | Annex E | CF11& OF3.2.1& OF1.8:O | Yes  No  N/A  |
| OF3.6.6 | Interference-limited areas, 5.0 GHz band (5 MHz channel spacing) | Annex E | CF11& OF3.2.2& OF1.8:O | Yes  No  N/A  |
| OF3.7 | *Reserved*(#61) |  |  |  |
| OF3.8 | Slot time | 18.3.8.6 (Slot time) | M | Yes  No  |
| OF3.8.1 | Slot time (20 MHz channel spacing) | 18.3.8.6 (Slot time) | CF11& RC2:M | Yes  No  N/A  |
| OF3.8.2 | Slot time (10 MHz channel spacing) | 18.3.8.6 (Slot time) | CF11& RC3& OF1.7:M | Yes  No  N/A  |
| OF3.8.3 | Slot time (5 MHz channel spacing) | 18.3.8.6 (Slot time) | CF11& RC4& OF1.8:M | Yes  No  N/A  |
| OF3.9 | Transmit and receive antenna connector(#1410) impedance | 18.3.8.7 (Transmit and receive impedance at the antenna connector) | M | Yes  No  |
| **OF4: PHY(#61) Transmit Specification** | | | | |
| OF4.1 | Transmit power levels |  | M | Yes  No  |
| OF4.1.1 | Power level (5.15–5.25 GHz) | 18.3.9.2 (Transmit power levels) | OF3.3.1:M | Yes  No  N/A  |
| OF4.1.2 | Power level (5.25–5.35 GHz) | 18.3.9.2 (Transmit power levels) | OF3.3.2:M | Yes  No  N/A  |
| OF4.1.3 | Power level (5.725–5.825 GHz) | 18.3.9.2 (Transmit power levels) | OF3.3.3:M | Yes  No  N/A  |
| \*OF4.1.4 | Power Level (5.850–5.925 GHz), Class A | D.2.2 (Transmit power levels) | CF17:M | Yes  No  N/A  |
| \*OF4.1.5 | Power Level (5.850–5.925 GHz), Class B | D.2.2 (Transmit power levels) | CF17:O | Yes  No  N/A  |
| \*OF4.1.6 | Power Level (5.850–5.925 GHz), Class C | D.2.2 (Transmit power levels) | CF17:O | Yes  No  N/A  |
| \*OF4.1.7 | Power Level (5.850–5.925 GHz), Class D | D.2.2 (Transmit power levels) | CF17:O | Yes  No  N/A  |
| OF4.2 | Spectrum mask | 18.3.9.3 (Transmit spectrum mask) | M | Yes  No  |
| OF4.3 | Spurious | 18.3.9.4 (Transmission spurious) | M | Yes  No  |
| OF4.4 | Center frequency tolerance | 18.3.9.5 (Transmit center frequency tolerance) | M | Yes  No  |
| OF4.5 | Clock frequency tolerance | 18.3.9.6 (Symbol clock frequency tolerance) | M | Yes  No  |
| OF4.6 | Modulation accuracy |  |  | Yes  No  |
| OF4.6.1 | Center frequency leakage | 18.3.9.7.2 (Transmitter center frequency leakage) | M | Yes  No  |
| OF4.6.2 | Spectral flatness | 18.3.9.7.3 (Transmitter spectral flatness) | M | Yes  No  |
| OF4.6.3 | Transmitter constellation error < –5 dB | 18.3.9.7.4 (Transmitter constellation error) | M | Yes  No  |
| OF4.6.4 | Transmitter constellation error < –8 dB | 18.3.9.7.4 (Transmitter constellation error) | OF1.2.2:M | Yes  No  N/A  |
| OF4.6.5 | Transmitter constellation error < –10 dB | 18.3.9.7.4 (Transmitter constellation error) | M | Yes  No  |
| OF4.6.6 | Transmitter constellation error < –13 dB | 18.3.9.7.4 (Transmitter constellation error) | OF1.2.4:M | Yes  No  N/A  |
| OF4.6.7 | Transmitter constellation error < –16 dB | 18.3.9.7.4 (Transmitter constellation error) | M | Yes  No  |
| OF4.6.8 | Transmitter constellation error < –19 dB | 18.3.9.7.4 (Transmitter constellation error) | OF1.2.6:M | Yes  No  N/A  |
| OF4.6.9 | Transmitter constellation error < –22 db | 18.3.9.7.4 (Transmitter constellation error) | OF1.2.7:M | Yes  No  N/A  |
| OF4.6.10 | Transmitter constellation error < –25 dB | 18.3.9.7.4 (Transmitter constellation error) | OF1.2.8:M | Yes  No  N/A  |
| OF4.7 | Power level, 4.9 GHz band  (20 MHz channel spacing) | 18.3.9.2 (Transmit power levels) | CF11& OF3.12.1:M | Yes  No  N/A  |
| OF4.8 | Power level, 5.0 GHz band  (20 MHz channel spacing) | 18.3.9.2 (Transmit power levels) | CF11& OF3.12.2:M | Yes  No  N/A  |
| OF4.9 | Power level, 5.47–5.725 GHz band | 18.3.9.2 (Transmit power levels) | CF11& OF3.12.3:M | Yes  No  N/A  |
| OF4.10 | Power level, 4.9 GHz band  (10 MHz channel spacing) | 18.3.9.2 (Transmit power levels) | CF11& OF3.12.1&OF1.7:M | Yes  No  N/A  |
| OF4.11 | Power level, 5.0 GHz band  (10 MHz channel spacing) | 18.3.9.2 (Transmit power levels) | CF11& OF3.12.2&OF1.7:M | Yes  No  N/A  |
| OF4.12 | Power level, 4.9 GHz band  (5 MHz channel spacing) | 18.3.9.2 (Transmit power levels) | CF11& OF3.12.1&OF1.8:M | Yes  No  N/A  |
| OF4.13 | Power level, 5.0 GHz band  (5 MHz channel spacing) | 18.3.9.2 (Transmit power levels) | CF11& OF3.12.2&OF1.8:M | Yes  No  N/A  |
| OF4.13a | Power level, 3.65–3.70 GHz (20 MHz channel spacing) | Annex E | CF15&OF3.2.7:M | Yes  No  N/A  |
| OF4.13b | Power level, 3.65–3.70 GHz (10 MHz channel spacing) | Annex E | CF15&OF3.2.7&OF1.7:M | Yes  No  N/A  |
| OF4.13c | Power level, 3.65–3.70 GHz (5 MHz channel spacing) | Annex E | CF15&OF3.2.7&OF1.8:M | Yes  No  N/A  |
| OF4.14 | Spectrum mask  (20 MHz channel spacing) | 18.3.9.3 (Transmit spectrum mask) | CF11:M | Yes  No  N/A  |
| OF4.15 | Spectrum mask  (10 MHz channel spacing) | 18.3.9.3 (Transmit spectrum mask) | CF11& OF1.7:M | Yes  No  N/A  |
| OF4.15.1 | Spectrum mask, Class A  (10 MHz channel spacing) | D.2.3 (Transmit spectrum mask) | OF4.1.4:M | Yes  No  N/A  |
| OF4.15.2 | Spectrum mask, Class B  (10 MHz channel spacing) | D.2.3 (Transmit spectrum mask) | OF4.1.5:M | Yes  No  N/A  |
| OF4.15.3 | Spectrum mask, Class C  (10 MHz channel spacing) | D.2.3 (Transmit spectrum mask) | OF4.1.6:M | Yes  No  N/A  |
| OF4.15.4 | Spectrum mask, Class D  (10 MHz channel spacing) | D.2.3 (Transmit spectrum mask) | OF4.1.7:M | Yes  No  N/A  |
| OF4.16 | Spectrum mask  (5 MHz channel spacing) | 18.3.9.3 (Transmit spectrum mask) | CF11& OF1.8:M | Yes  No  N/A  |
| OF4.17 | Transmitter constellation error  (10 MHz channel spacing) |  |  |  |
| OF4.17.1 | Transmitter constellation error < –5 dB (10 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.7.1:M | Yes  No  N/A  |
| OF4.17.2 | Transmitter constellation error < –8 dB (10 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.7.2:M | Yes  No  N/A  |
| OF4.17.3 | Transmitter constellation error < –10 dB (10 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.7.3:M | Yes  No  N/A  |
| OF4.17.4 | Transmitter constellation error < –13 dB (10 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.7.4:M | Yes  No  N/A  |
| OF4.17.5 | Transmitter constellation error < –16 dB (10 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.7.5:M | Yes  No  N/A  |
| OF4.17.6 | Transmitter constellation error < –19 dB (10 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.7.6:M | Yes  No  N/A  |
| OF4.17.7 | Transmitter constellation error < –22 dB (10 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.7.7:M | Yes  No  N/A  |
| OF4.17.8 | Transmitter constellation error < –25 dB (10 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.7.8:M | Yes  No  N/A  |
| OF4.18 | Transmitter constellation error  (5 MHz channel spacing) |  |  |  |
| OF4.18.1 | Transmitter constellation error < –5 dB  (5 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.8.1:M | Yes  No  N/A  |
| OF4.18.2 | Transmitter constellation error < –8 dB  (5 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.8.2:M | Yes  No  N/A  |
| OF4.18.3 | Transmitter constellation error < –10 dB  (5 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.8.3:M | Yes  No  N/A  |
| OF4.18.4 | Transmitter constellation error < –13 dB  (5 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.8.4:M | Yes  No  N/A  |
| OF4.18.5 | Transmitter constellation error < –16 dB (5 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.8.5:M | Yes  No  N/A  |
| OF4.18.6 | Transmitter constellation error < –19 dB (5 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.8.6:M | Yes  No  N/A  |
| OF4.18.7 | Transmitter constellation error < –22 dB (5 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.8.7:M | Yes  No  N/A  |
| OF4.18.8 | Transmitter constellation error < –25 dB (5 MHz channel spacing) | 18.3.9.7.4 (Transmitter constellation error) | CF11& OF1.8.8:M | Yes  No  N/A  |
| **OF5: PHY(#61) Receiver Specifications** | | | | |
| OF5.1 | Minimum input level sensitivity at packet error ratio (PER) = 10% with 1000 octet frames |  |  |  |
| OF5.1.1 | –82 dBm for 6 Mb/s | 18.3.10.2 (Receiver minimum input sensitivity) | M | Yes  No  |
| OF5.1.2 | –81 dBm for 9 Mb/s | 18.3.10.2 (Receiver minimum input sensitivity) | OF1.2.2:M | Yes  No  N/A  |
| OF5.1.3 | –79 dBm for 12 Mb/s | 18.3.10.2 (Receiver minimum input sensitivity) | M | Yes  No  |
| OF5.1.4 | –77 dBm for 18 Mb/s | 18.3.10.2 (Receiver minimum input sensitivity) | OF1.2.4:M | Yes  No  N/A  |
| OF5.1.5 | –74 dBm for 24 Mb/s | 18.3.10.2 (Receiver minimum input sensitivity) | M | Yes  No  |
| OF5.1.6 | –70 dBm for 36 Mb/s | 18.3.10.2 (Receiver minimum input sensitivity) | OF1.2.6:M | Yes  No  N/A  |
| OF5.1.7 | –66 dBm for 48 Mb/s | 18.3.10.2 (Receiver minimum input sensitivity) | OF1.2.7:M | Yes  No  N/A  |
| OF5.1.8 | –65 dBm for 54 Mb/s | 18.3.10.2 (Receiver minimum input sensitivity) | OF1.2.8:M | Yes  No  N/A  |
| OF5.2 | Adjacent channel rejection | 18.3.10.3 (Adjacent channel rejection) | M | Yes  No  |
| OF5.2.1 | Optional adjacent channel rejection | 18.3.10.3 (Adjacent channel rejection) | O | Yes  No  |
| OF5.3 | Nonadjacent channel rejection | 18.3.10.4 (Nonadjacent channel rejection) | M | Yes  No  |
| OF5.3.1 | Optional nonadjacent channel rejection | 18.3.10.4 (Nonadjacent channel rejection) | O | Yes  No  |
| OF5.4 | Maximum input level | 18.3.10.5 (Receiver maximum input level) | M | Yes  No  |
| OF5.5 | CCA sensitivity | 18.3.10.6 (CCA requirements) | M | Yes  No  |
| OF5.6 | Maximum input level sensitivity at packet error ratio (PER) = 10% with 1000 octet frames (10 MHz channel spacing) |  |  |  |
| OF5.6.1 | –85 dBm for 3 Mb/s  (10 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.7.1:M | Yes  No  N/A  |
| OF5.6.2 | –84 dBm for 4.5 Mb/s  (10 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.7.2:M | Yes  No  N/A  |
| OF5.6.3 | –82 dBm for 6 Mb/s  (10 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.7.3:M | Yes  No  N/A  |
| OF5.6.4 | –80 dBm for 9 Mb/s  (10 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.7.4:M | Yes  No  N/A  |
| OF5.6.5 | –77 dBm for 12 Mb/s  (10 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.7.5:M | Yes  No  N/A  |
| OF5.6.6 | –73 dBm for 18 Mb/s  (10 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.7.6:M | Yes  No  N/A  |
| OF5.6.7 | –69 dBm for 24 Mb/s  (10 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.7.7:M | Yes  No  N/A  |
| OF5.6.8 | –68 dBm for 27 Mb/s  (10 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.7.8:M | Yes  No  N/A  |
| OF5.7 | Adjacent channel rejection  (10 MHz channel spacing) | 18.3.10.3 (Adjacent channel rejection) | CF11& OF1.7:M | Yes  No  N/A  |
| OF5.8 | Nonadjacent channel rejection  (10 MHz channel spacing) | 18.3.10.4 (Nonadjacent channel rejection) | CF11& OF1.7:M | Yes  No  N/A  |
| OF5.9 | Maximum input level  (10 MHz channel spacing) | 18.3.10.5 (Receiver maximum input level) | CF11& OF1.7:M | Yes  No  N/A  |
| OF5.10 | CCA sensitivity  (10 MHz channel spacing) | 18.3.10.6 (CCA requirements) | CF11& OF1.7:M | Yes  No  N/A  |
| OF5.11 | Maximum input level sensitivity at packet error ratio (PER) = 10% with 1000 octet frames (5 MHz channel spacing) |  |  |  |
| OF5.11.1 | –85 dBm for 3 Mb/s  (5 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.8.1:M | Yes  No  N/A  |
| OF5.11.2 | –84 dBm for 4.5 Mb/s  (5 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.8.2:M | Yes  No  N/A  |
| OF5.11.3 | –82 dBm for 6 Mb/s  (5 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.8.3:M | Yes  No  N/A  |
| OF5.11.4 | –80 dBm for 9 Mb/s  (5 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.8.4:M | Yes  No  N/A  |
| OF5.11.5 | –77 dBm for 12 Mb/s  (5 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.8.5:M | Yes  No  N/A  |
| OF5.11.6 | –73 dBm for 18 Mb/s  (5 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.8.6:M | Yes  No  N/A  |
| OF5.11.7 | –69 dBm for 24 Mb/s  (5 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF.1.8.7:M | Yes  No  N/A  |
| OF5.11.8 | –68 dBm for 27 Mb/s  (5 MHz channel spacing) | 18.3.10.2 (Receiver minimum input sensitivity) | CF11& OF1.8.8:M | Yes  No  N/A  |
| OF5.12 | Adjacent channel rejection  (5 MHz channel spacing) | 18.3.10.3 (Adjacent channel rejection) | CF11& OF1.8:M | Yes  No  N/A  |
| OF5.13 | Nonadjacent channel rejection  (5 MHz channel spacing) | 18.3.10.4 (Nonadjacent channel rejection) | CF11& OF1.8:M | Yes  No  N/A  |
| OF5.14 | Maximum input level  (5 MHz channel spacing) | 18.3.10.5 (Receiver maximum input level) | CF11& OF1.8:M | Yes  No  N/A  |
| OF5.15 | CCA sensitivity  (5 MHz channel spacing) | 18.3.10.6 (CCA requirements) | CF11& OF1.8:M | Yes  No  N/A  |
| **OF6: Transmit PHY(#61)** | | | | |
| OF6.1 | Transmit: transmit on MAC request | 18.3.11 (Transmit PHY) | M | Yes  No  |
| OF6.2 | Transmit: format and data encoding | 18.3.11 (Transmit PHY) | M | Yes  No  |
| OF6.3 | Transmit: timing | 18.3.11 (Transmit PHY) | M | Yes  No  |
| **OF7: Receive PHY(#61)** | | | | |
| OF7.1 | Receive: receive and data decoding | 18.3.12 (Receive PHY) | M | Yes  No  |
| **OF8: PLME** | | | | |
| OF8.1 | PLME: support PLME\_SAP  management primitives | 18.4.1 (PLME\_SAP sublayer management primitives) | M | Yes  No  |
| OF8.2 | PLME: support PHY MIB | 18.4.2 (OFDM PHY MIB) | M | Yes  No  |
| OF8.3 | PLME: support PHY characteristics | 18.4.3 (OFDM TXTIME calculation) | M | Yes  No  |
| OF8.4 | PLME:support PHY characteristics (dot11ChannelStartingFactor) | 18.4.2 (OFDM PHY MIB) | CF11:M | Yes  No  N/A  |
| OF9(#61) | *Reserved* |  |  |  |
| **OF10: Geographic Area Specific Requirements** | | | | |
| \*OF10.1 | Geographic areas | 18.3.8.3 (Regulatory requirements),  18.3.8.4 (Operating channel frequencies),  18.3.8.5 (Transmit and receive in-band and out-of-band spurious emissions),  18.3.9.4 (Transmission spurious) | M | Yes  No  |
| OF10.2 | Regulatory domain extensions | 18.3.8.4.3 (Channelization), 18.3.8.5 (Transmit and receive in-band and out-of-band spurious emissions), 18.3.9.2 (Transmit power levels), 18.3.9.3 (Transmit spectrum mask), Annex E | CF11:M | Yes  No  N/A  |

|  |  |  |  |  |
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| * **High rate(#1353), direct sequence PHY functions** | | | | |
| **Item** | **PHY feature** | **References** | **Status** | **Support** |
|  | Are the following PHY features -supported? |  |  |  |
| HRDS1 | Long preamble and header procedures | 17.2 (High rate PHY) | M | Yes  No  |
| HRDS1.1 | Long direct sequence preamble prepended on TX | 17.2.1 (Overview) | M | Yes  No  |
| HRDS1.2 | Long PHY(#61) integrity check generation | 17.2.3 (PPDU field definitions)(#61) | M | Yes  No  |
| HRDS1.3 | TX rate change capability | 17.2.3.4 (Long PHY SIGNAL field) | M | Yes  No  |
| HRDS1.4 | Supported data rates | 17.1 (Overview), 17.2.3.4 (Long PHY SIGNAL field) | M | Yes  No  |
| HRDS1.5 | Data scrambler | 17.2.4 (PHY/high rate PHY data scrambler and descrambler) | M | Yes  No  |
| HRDS1.6 | Scrambler initialization | 17.2.4 (PHY/high rate PHY data scrambler and descrambler) | M | Yes  No  |
| HRDS2 | *Reserved*(#63) |  |  |  |
| \*HRDS3 | Short preamble and header procedures | 17.2 (High rate PHY) | O | Yes  No  |
| HRDS3.1 | Short preamble prepended on TX | 17.2.2 (PPDU format) | HRDS3:M | Yes  No  N/A  |
| HRDS3.2 | Short header transmission | 17.2.3.9 (Short PHY synchronization (shortSYNC)), 17.2.3.10 (Short PHY SFD field (shortSFD)),  17.2.3.11 (Short PHY SIGNAL field (shortSIGNAL)), 17.2.3.12 (Short PHY SERVICE field (shortSERVICE)),  17.2.3.13 (Short PHY LENGTH field (shortLENGTH)),  17.2.3.14 (Short CRC-16 field (shortCRC)),  17.2.3.15 (Short PHY data modulation and modulation rate change) | HRDS3:M | Yes  No  N/A  |
| HRDS4 | Long preamble process on RX | 17.2.6 (Receive PHY) | M | Yes  No  |
| HRDS4.1 | PHY(#61) format | 17.2.6 (Receive PHY) | M | Yes  No  |
| HRDS4.2 | PHY(#61) integrity check verify | 17.2.6 (Receive PHY) | M | Yes  No  |
| HRDS4.3 | RX Rate change capability | 17.2.6 (Receive PHY) | M | Yes  No  |
| HRDS4.4 | Data whitener descrambler | 17.2.6 (Receive PHY) | M | Yes  No  |
| \*HRDS5 | Short preamble process on RX | 17.2.6 (Receive PHY) | HRDS3:M | Yes  No  N/A  |
| HRDS5.1 | PHY(#61) format | 17.2.6 (Receive PHY) | HRDS5:M | Yes  No  N/A  |
| HRDS5.2 | PHY(#61) integrity check verify | 17.2.6 (Receive PHY) | HRDS5:M | Yes  No  N/A  |
| HRDS5.3 | RX rate change capability | 17.2.6 (Receive PHY) | HRDS5:M | Yes  No  N/A  |
| HRDS5.4 | Data whitener descrambler | 17.2.6 (Receive PHY) | HRDS5:M | Yes  No  N/A  |
| \*HRDS6 | Operating channel capability | — | — | — |
| \*HRDS6.1 | North America (FCC) | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6:O.3 | Yes  No  N/A  |
| HRDS6.1.1 | Channel 1 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.1:M | Yes  No  N/A  |
| HRDS6.1.2 | Channel 2 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.1:M | Yes  No  N/A  |
| HRDS6.1.3 | Channel 3 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.1:M | Yes  No  N/A  |
| HRDS6.1.4 | Channel 4 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.1:M | Yes  No  N/A  |
| HRDS6.1.5 | Channel 5 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.1:M | Yes  No  N/A  |
| HRDS6.1.6 | Channel 6 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.1:M | Yes  No  N/A  |
| HRDS6.1.7 | Channel 7 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.1:M | Yes  No  N/A  |
| HRDS6.1.8 | Channel 8 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.1:M | Yes  No  N/A  |
| HRDS6.1.9 | Channel 9 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.1:M | Yes  No  N/A  |
| HRDS6.1.10 | Channel 10 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.1:M | Yes  No  N/A  |
| HRDS6.1.11 | Channel 11 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.1:M | Yes  No  N/A  |
| \*HRDS6.2 | Canada (IC) | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6:O.3 | Yes  No  N/A  |
| HRDS6.2.1 | Channel 1 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.2:M | Yes  No  N/A  |
| HRDS6.2.2 | Channel 2 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.2:M | Yes  No  N/A  |
| HRDS6.2.3 | Channel 3 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.2:M | Yes  No  N/A  |
| HRDS6.2.4 | Channel 4 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.2:M | Yes  No  N/A  |
| HRDS6.2.5 | Channel 5 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.2:M | Yes  No  N/A  |
| HRDS6.2.6 | Channel 6 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.2:M | Yes  No  N/A  |
| HRDS6.2.7 | Channel 7 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.2:M | Yes  No  N/A  |
| HRDS6.2.8 | Channel 8 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.2:M | Yes  No  N/A  |
| HRDS6.2.9 | Channel 9 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.2:M | Yes  No  N/A  |
| HRDS6.2.10 | Channel 10 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.2:M | Yes  No  N/A  |
| HRDS6.2.11 | Channel 11 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.2:M | Yes  No  N/A  |
| \*HRDS6.3 | Europe (ETSI) | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6:O.3 | Yes  No  N/A  |
| HRDS6.3.1 | Channel 1 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| HRDS6.3.2 | Channel 2 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| HRDS6.3.3 | Channel 3 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| HRDS6.3.4 | Channel 4 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| HRDS6.3.5 | Channel 5 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| HRDS6.3.6 | Channel 6 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| HRDS6.3.7 | Channel 7 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| HRDS6.3.8 | Channel 8 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| HRDS6.3.9 | Channel 9 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| HRDS6.3.10 | Channel 10 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| HRDS6.3.11 | Channel 11 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| HRDS6.3.12 | Channel 12 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| HRDS6.3.13 | Channel 13 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.3:M | Yes  No  N/A  |
| \*HRDS6.4 | France | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6:O.3 | Yes  No  N/A  |
| HRDS6.4.1 | Channel 10 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.4:M | Yes  No  N/A  |
| HRDS6.4.2 | Channel 11 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.4:M | Yes  No  N/A  |
| HRDS6.4.3 | Channel 12 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.4:M | Yes  No  N/A  |
| HRDS6.4.4 | Channel 13 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.4:M | Yes  No  N/A  |
| \*HRDS6.5 | Spain | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6:O.3 | Yes  No  N/A  |
| HRDS6.5.1 | Channel 10 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.5:M | Yes  No  N/A  |
| HRDS6.5.2 | Channel 11 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.5:M | Yes  No  N/A  |
| \*HRDS6.6 | Japan | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6:O.3 | Yes  No  N/A  |
| HRDS6.6.1 | Channel 1 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.2 | Channel 2 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.3 | Channel 3 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.4 | Channel 4 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.5 | Channel 5 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.6 | Channel 6 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.7 | Channel 7 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.8 | Channel 8 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.9 | Channel 9 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.10 | Channel 10 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.11 | Channel 11 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.12 | Channel 12 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.13 | Channel 13 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| HRDS6.6.14 | Channel 14 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.6:M | Yes  No  N/A  |
| \*HRDS6.7 | China (Radio Administration The Radio Administration of P.R.China) | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6:O.3 | Yes  No  N/A  |
| HRDS6.7.1 | Channel 1 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS6.7.2 | Channel 2 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS6.7.3 | Channel 3 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS6.7.4 | Channel 4 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS6.7.5 | Channel 5 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS6.7.6 | Channel 6 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS6.7.7 | Channel 7 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS6.7.8 | Channel 8 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS6.7.9 | Channel 9 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS6.7.10 | Channel 10 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS6.7.11 | Channel 11 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS6.7.12 | Channel 12 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS6.7.13 | Channel 13 | 17.3.6.3 (Channel Numbering of operating channels) | HRDS6.7:M | Yes  No  N/A  |
| HRDS7 | *Reserved*(#63) |  |  |  |
| HRDS8 | Complementary code keying (CCK) bits to symbol mapping |  |  |  |
| HRDS8.1 | 5.5 Mb/s | 17.3.6.6 (Spreading sequences and modulation for CCK modulation at 5.5 Mb/s and 11 Mb/s) | M | Yes  No  |
| HRDS8.2 | 11 Mb/s | 17.3.6.6 (Spreading sequences and modulation for CCK modulation at 5.5 Mb/s and 11 Mb/s) | M | Yes  No  |
| HRDS9 | *Reserved*(#302) |  |  |  |
| \*HRDS10 | CCA functionality | 17.3.8.5 (CCA) |  |  |
| HRDS10.1 | CCA Mode 1, energy only (RSSI above threshold) | 17.3.8.5 (CCA) | HRDS10:O.4 | Yes  No  N/A  |
| HRDS10.2 | CCA Mode 4, CS with timer | 17.3.8.5 (CCA) | HRDS10:O.4 | Yes  No  N/A  |
| HRDS10.3 | CCA Mode 5, energy detect with high rate(#1353) CS | 17.3.8.5 (CCA) | HRDS10:O.4 | Yes  No  N/A  |
| HRDS10.4 | Hold CCA busy for packet duration of a correctly received PPDU(#61), but carrier lost during reception of MPDU. | 17.2.6 (Receive PHY) | M | Yes  No  |
| HRDS10.5 | Hold CCA busy for packet duration of a correctly received, but out of spec, PPDU(#61). | 17.2.6 (Receive PHY) | M | Yes  No  |
| HRDS11 | Transmit antenna selection | 17.3.5 (Vector descriptions)(#61) | O | Yes  No  |
| HRDS12 | Receive antenna diversity | 17.3.5 (Vector descriptions)(#61) | O | Yes  No  |
| \*HRDS13 | Antenna connector(#1410)(s) availability | 17.3.6.7 (Transmit and receive in-band and out-of-band spurious emissions) | O | Yes  No  |
| HRDS13.1 | If available (50 impedance) | 17.3.6.7 (Transmit and receive in-band and out-of-band spurious emissions) | HRDS13:M | Yes  No  N/A  |
| \*HRDS14 | Transmit power level support | (#61)17.3.7.3 (Transmit power level control) | O | Yes  No  |
| HRDS14.1 | If greater than 100 mW capability | 17.3.7.3 (Transmit power level control) | HRDS14:M | Yes  No  N/A  |
| HRDS15 | Spurious emissions conformance | 17.3.6.7 (Transmit and receive in-band and out-of-band spurious emissions) | M | Yes  No  |
| HRDS16 | TX-to-RX turnaround time | 17.3.6.8 (TX-to-RX turnaround time) | M | Yes  No  |
| HRDS17 | RX-to-TX turnaround time | 17.3.6.9 (RX-to-TX turnaround time) | M | Yes  No  |
| HRDS18 | Slot time | 17.3.6.10 (Slot time) | M | Yes  No  |
| HRDS19 | ED reporting time | 17.3.6.9 (RX-to-TX turnaround time), 17.3.8.5 (CCA) | M | Yes  No  |
| HRDS20 | Minimum transmit power level | 17.3.7.3 (Transmit power level control) | M | Yes  No  |
| HRDS21 | Transmit spectral mask conformance | 17.3.7.4 (Transmit spectrum mask) | M | Yes  No  |
| HRDS22 | Transmitted center frequency tolerance | 17.3.7.5 (Transmit center frequency tolerance) | M | Yes  No  |
| HRDS23 | Chip clock frequency tolerance | 17.3.7.6 (Chip clock frequency tolerance) | M | Yes  No  |
| HRDS24 | Transmit power-on ramp | 17.3.7.7 (Transmit power-on and power-down ramp) | M | Yes  No  |
| HRDS25 | Transmit power-down ramp | 17.3.7.7 (Transmit power-on and power-down ramp) | M | Yes  No  |
| HRDS26 | RF carrier suppression | 17.3.7.8 (RF carrier suppression) | M | Yes  No  |
| HRDS27 | Transmit modulation accuracy | 17.3.7.9 (Transmit modulation accuracy) | M | Yes  No  |
| HRDS28 | Receiver minimum input level  sensitivity | 17.3.8.2 (Receiver minimum input level sensitivity) | M | Yes  No  |
| HRDS29 | Receiver maximum input level | 17.3.8.3 (Receiver maximum input level) | M | Yes  No  |
| HRDS30 | Receiver adjacent channel rejection | 17.3.8.4 (Receiver adjacent channel rejection) | M | Yes  No  |
| HRDS31 | MIB | 17.3.2 (High rate PHY MIB), Annex J | M | Yes  No  |
| HRDS31.1 | PHY object class | 17.3.3 (DS PHY characteristics) | M | Yes  No  |

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| * **Regulatory Domain Extensions** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
| MD1 | Country element  Length  Country String  First Channel Number  Maximum Transmit Power Level  Number of Channels | 8.3.3.2 (Beacon frame format),  8.3.3.10 (Probe Response frame format)  8.4.2.9 (Country element) | CF8:M | Yes  No  N/A  |
| MD2 | Inclusion of the Request information in the Probe Request frame | 8.3.3.9 (Probe Request frame format) | CF8:O | Yes  No  N/A  |
| MD3 | *Reserved*(#63) |  |  |  |
| MD4 | *Reserved*(#63) |  |  |  |
| MD5 | Request element    Format  Element ID  Order of the Requested Elemented IDs | 8.4.2.10 (Request element) | CF8:M | Yes  No  N/A  |
| MD6 | Entering a Regulatory Domain  Lost Connectivity with its extended service set (ESS)  Passive Scanning to learn  Beacon information  Transmit Probe Request | 9.19.2 (Operation upon entering a regulatory domain) | CF8:M | Yes  No  N/A  |
| MD7 | *Reserved*(#63) |  |  |  |
| MD8 | Roaming requires Beacon frame with country element | 10.1.4.4 (Initializing a BSS) | CF8:M | Yes  No  N/A  |
| MD9 | Actions to be taken upon the receipt of the Beacon frame | 10.1.4.5 (Synchronizing with a BSS) | CF8:M | Yes  No  N/A  |
| MD10 | Ignore improperly formed Request element | 8.3.3.10 (Probe Response frame format) | CF8:O | Yes  No  N/A  |
| MD11 | *Reserved*(#63) |  |  |  |
| MD12 | Operating and Coverage classes | 8.4.2.9 (Country element) | RC1:M | Yes  No  N/A  |
| MD13 | Reserved First Channel Number | 9.19.4 (Operation with operating classes) | CF15:M | Yes  No  N/A  |
| MD14 | Reserved Operating Class | 9.19.4 (Operation with operating classes) | CF15:M | Yes  No  N/A  |
| MD15 | Operation with operating classes  Multiple classes in Country element  Multiple classes in Association and Reassociation frames | 9.19.4 (Operation with operating classes)  9.19.4 (Operation with operating classes) | CF15:M  CF15:M | Yes  No  N/A    Yes  No  N/A  |

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| * **ERP functions** | | | | |
| **Item** | **PHY features** | **References** | **Status** | **Support** |
| \*ERP1 | Transmit and Receive ERP-DSSS data rates 1 and 2 Mb/s and ERP-CCK data rates 5.5 and 11 Mb/s | 19.3.2 (PPDU format) | CF9:M | Yes  No  N/A  |
| ERP1.1 | Transmit and receive ERP-OFDM data rates of 6, 12, and 24 Mb/s | 19.3.2 (PPDU format) | CF9:M | Yes  No  N/A  |
| ERP1.2 | Transmit and receive ERP-OFDM data rate of 9 Mb/s | 19.3.2 (PPDU format) | ERP1:O | Yes  No  N/A  |
| ERP1.3 | Transmit and receive ERP-OFDM data rate of 18 Mb/s | 19.3.2 (PPDU format) | ERP1:O | Yes  No  N/A  |
| ERP1.4 | Transmit and receive ERP-OFDM data rate of 36 Mb/s | 19.3.2 (PPDU format) | ERP1:O | Yes  No  N/A  |
| ERP1.5 | Transmit and receive ERP-OFDM data rate of 48 Mb/s | 19.3.2 (PPDU format) | ERP1:O | Yes  No  N/A  |
| ERP1.6 | Transmit and receive ERP-OFDM data rate of 54 Mb/s | 19.3.2 (PPDU format) | ERP1:O | Yes  No  N/A  |
| ERP2 | *Reserved*(#300) |  |  |  |
| ERP3 | *Reserved*(#300) |  |  |  |
| ERP4 | Support of ERP3 required PPDU formats as described in -reference | 19.3.2 (PPDU format) | CF9:O | Yes  No  N/A  |
| ERP5 | Able to transmit and receive long and short DSSS as well as OFDM preambles | 19.3.2 (PPDU format) | CF9:M | Yes  No  N/A  |
| ERP6 | Set SERVICE field bits for locked clocks, and length extension (B0, b2, b3, b5, b6, and b7)(#300) | 19.3.2.2 (Long preamble PPDU format) | CF9:M | Yes  No  N/A  |
| ERP7 | Set b1 and b4 of long and short preamble PPDU SERVICE field to 0 | 19.3.2.2 (Long preamble PPDU format) | CF9:M | Yes  No  N/A  |
| ERP8 | (#1702)Set b2 to 1 in all long and short preamble PPDU SERVICE fields | 19.3.2.2 (Long preamble PPDU format) | CF9:M | Yes  No  N/A  |
| ERP9 | Set b7(#300) of the long and short preamble PPDU -SERVICE fields as described in the -reference | 19.3.2.2 (Long preamble PPDU format), 19.3.2.3 (Short preamble PPDU format) | CF9:M | Yes  No  N/A  |
| ERP10 | Use Clause 16 (DSSS PHY specification for the 2.4 GHz band designated for ISM -applications) or Clause 17 (High rate direct sequence spread spectrum (HR/DSSS) PHY -specification) rates when using protection -mechanisms | 9.24 (Protection mechanisms) | CF9:M | Yes  No  N/A  |
| ERP11 | *Reserved*(#300) |  |  |  |
| ERP12 | *Reserved*(#300) |  |  |  |
| ERP13 | *Reserved*(#300) |  |  |  |
| ERP14 | *Reserved*(#300) |  |  |  |
| ERP15 | *Reserved*(#300) |  |  |  |
| ERP16 | Add signal extension of 6 µs | 19.3.2.4 (ERP-OFDM PPDU format) | CF9:M | Yes  No  N/A  |
| ERP17 | Simultaneous CCA on long preamble Barker, short preamble Barker, and OFDM | 19.3.4 (CCA) | CF9:M | Yes  No  N/A  |
| ERP18 | CCA with energy detect above threshold and CS | 19.3.4 (CCA) | CF9:M | Yes  No  N/A  |
| ERP19 | *Reserved*(#300) |  |  |  |
| ERP20 | Able to automatically detect format of long preamble Barker, short preamble Barker, and OFDM and receive appropriately | 19.3.5 (PHY receive procedure) | CF9:M | Yes  No  N/A  |
| ERP21 | Comply with local regulatory frequency allocation requirements | 19.4.2 (Regulatory requirements) | CF9:M | Yes  No  N/A  |
| ERP22 | Use frequency plan for 2.4 GHz | 19.4.3 (Operating channel frequencies) | CF9:M | Yes  No  N/A  |
| ERP23 | Comply with regulatory spurious emissions -regulations | 19.4.4 (Transmit and receive in-band and out-of-band spurious emissions) | CF9:M | Yes  No  N/A  |
| ERP24 | Slot time requirements | 19.5.4 (ERP-OFDM PHY characteristics) (#1659) | CF9:M | Yes  No  N/A  |
| ERP25 | Implement Short Slot Time option | 19.5.4 (ERP-OFDM PHY characteristics) (#1659) | CF9:O | Yes  No  N/A  |
| ERP26 | Use 10 µs short interframe space (SIFS) time | 19.4.6 (CCA performance) | CF9:M | Yes  No  N/A  |
| ERP27 | Comply with regulatory transmit power -requirements | 19.4.7.2 (Transmit power levels) | CF9:M | Yes  No  N/A  |
| ERP28 | ± 25 PPM frequency tolerance | 19.4.7.4 (Transmit center frequency tolerance) | CF9:M | Yes  No  N/A  |
| ERP29 | Use locked clocks | 19.4.7.4 (Transmit center frequency tolerance), 19.4.7.5 (Symbol clock frequency tolerance) | CF9:M | Yes  No  N/A  |
| ERP30 | Tolerate input level of   –20 dBm | 19.4.8.4 (Receive maximum input level capability) | CF9:M | Yes  No  N/A  |
| ERP31 | Use specified transmit mask | 19.5 (ERP PLME) | CF9:M | Yes  No  N/A  |
| ERP32 | Meet sensitivity for all supported data rates | 19.4.8.2 (Receiver minimum input level sensitivity) | CF9:M | Yes  No  N/A  |
| ERP33 | Reject adjacent channels as in Table 18-14 (Receiver performance requirements) in 18.3.10.2 (Receiver minimum input sensitivity) or in 17.3.8.4 (Receiver adjacent channel rejection) as appropriate | 19.4.8.3 (Adjacent channel rejection) | CF9:M | Yes  No  N/A  |
| ERP34 | *Reserved*(#300) |  |  |  |
| ERP35 | *Reserved*(#300) |  |  |  |
| ERP36 | *Reserved*(#300) |  |  |  |
| ERP37 | *Reserved*(#300) |  |  |  |
| ERP38 | *Reserved*(#300) |  |  |  |
| ERP39 | Calculate ERP-OFDM TXTIME | 19.5.3.2 (ERP-OFDM TXTIME calculations) | CF9:M | Yes  No  N/A  |
| ERP40 | *Reserved*(#300) |  |  |  |
| ERP41 | *Reserved*(#300) |  |  |  |
| ERP42 | Revert to long slot time when establishing association with a long slot time STA | 8.4.1.4 (Capability Information field) | CF9:M | Yes  No  N/A  |
| ERP43 | Support TXVECTOR and RXVECTOR as described in reference | 9.3 (DCF) | CF9:M | Yes  No  N/A  |
| ERP44 | *Reserved*(#300) |  |  |  |

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| * **Spectrum management extensions** | | | | |
| **Item** | **IUT configuration** | **References** | **Status** | **Support** |
| SM1 | Country, Power Constraint, and transmit power control (TPC) Report elements included in -Beacon and Probe Response frames | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.9 (Country element), 8.4.2.11 (ERP element), 8.4.2.14 (Power Capability element) | CF10: M | Yes  No  N/A  |
| SM2 | Spectrum Management Capability bit | 8.4.1.4 (Capability Information field) | CF10:M | Yes  No  N/A  |
| SM3 | Power Capability and Supported -Channels elements in Association and Reassociation frames | 8.3.3.5 (Association Request frame format), 8.3.3.6 (Association Response frame format), 10.6.1 (Introduction) | CF10:M | Yes  No  N/A  |
| SM4 | Action frame protocol for spectrum -management actions | 8.4.1.11 (Action field), 8.6 (Action frame format details) | CF10:M | Yes  No  N/A  |
| SM4.1 | Measurement Request frame | 8.6.2.2 (Measurement Request frame format) | CF10:M | Yes  No  N/A  |
| SM4.2 | Measurement Report frame | 8.6.2.3 (Measurement Report frame format) | CF10:M | Yes  No  N/A  |
| SM4.3 | TPC Request frame | 8.6.2.4 (TPC Request frame format) | CF10:M | Yes  No  N/A  |
| SM4.4 | TPC Report frame | 8.6.2.5 (TPC Report frame format) | CF10:M | Yes  No  N/A  |
| SM4.5 | Channel Switch Announcement frame | 8.6.2.6 (Channel Switch Announcement frame format) | CF10:M | Yes  No  N/A  |
| SM5 | Measurement requests |  |  |  |
| SM5.1 | Basic request | 8.4.2.20.2 (Basic request) | CF10:M | Yes  No  N/A  |
| SM5.2 | CCA request | 8.4.2.20.3 (CCA request) | CF10:O | Yes  No  N/A  |
| SM5.3 | Receive power indication (RPI) -histogram | 8.4.2.20.4 (RPI histogram request) | CF10:O | Yes  No  N/A  |
| SM5.4 | Enabling/disabling requests and reports | 8.4.2.20 (Measurement Request element) | CF10:M | Yes  No  N/A  |
| SM6 | Measurement reports |  |  |  |
| SM6.1 | Basic report | 8.4.2.21.2 (Basic report) | CF10:M | Yes  No  N/A  |
| SM6.2 | CCA report | 8.4.2.21.3 (CCA report) | CF10:O | Yes  No  N/A  |
| SM6.3 | RPI histogram report | 8.4.2.21.4 (RPI histogram report) | CF10:O | Yes  No  N/A  |
| SM6.4 | Refusal to measure | 8.4.2.21 (Measurement Report element) | CF10:M | Yes  No  N/A  |
| SM7 | Quiet interval |  |  |  |
| SM7.1 | AP-defined Quiet interval | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.22 (Quiet element), 10.6.2 (Procedure at the STA) | (CF1 and CF10):M | Yes  No  N/A  |
| SM7.2 | STA-defined Quiet interval | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.22 (Quiet element), 10.6.2 (Procedure at the STA) | (CF2.1 and CF10):M | Yes  No  N/A  |
| SM7.3 | STA support for Quiet interval | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.22 (Quiet element), 10.6.2 (Procedure at the STA) | CF10:M | Yes  No  N/A  |
| SM8 | Association control based on -spectrum management capability | 10.8 (TPC procedures), 10.9 (DFS procedures) | (CF1 and CF10):M | Yes  No  N/A  |
| SM9 | Association control based on -transmit power capability | 10.8.2 (Association based on transmit power capability) | (CF1 and CF10):M | Yes  No  N/A  |
| SM10 | Maximum transmit power levels |  |  |  |
| SM10.1 | AP determination and communication of local maximum transmit power level | 10.8.4 (Specification of regulatory and local maximum transmit power levels) | (CF1 and CF10):M | Yes  No  N/A  |
| SM10.2 | STA determination and communication of local maximum transmit power level | 10.8.4 (Specification of regulatory and local maximum transmit power levels) | ((CF2.1 or CF2.2) and CF10):M | Yes  No  N/A  |
| SM11 | Selection of transmit power | 10.8.5 (Selection of a transmit power) | CF10:M | Yes  No  N/A  |
| SM12 | Adaptation of transmit power |  |  |  |
| SM12.1 | TPC report in Beacon and Probe Response frames | 10.8.6 (Adaptation of the transmit power) | CF10:M | Yes  No  N/A  |
| SM13.1 | Dynamic transmit power -adaptation | 10.8.6 (Adaptation of the transmit power) | CF10:O | Yes  No  N/A  |
| SM13 | Testing channels for radars | 10.9.4 (Testing channels for radars) | CF10:M | Yes  No  N/A  |
| SM14 | Detecting and discontinuing -operations after detection of a radar | 10.9.5 (Discontinuing operations after detecting radars) | CF10:M | Yes  No  N/A  |
| SM15 | Requesting and reporting of -measurements | 10.9.7 (Requesting and reporting of measurements) | CF10:M | Yes  No  N/A  |
| SM16 | Autonomous reporting of radars | 10.9.7 (Requesting and reporting of measurements) | CF10:M | Yes  No  N/A  |
| SM17 | IBSS dynamic frequency selection (DFS) -element including channel map | 8.4.2.23 (IBSS DFS element) | (CF2.2 and CF10):M | Yes  No  N/A  |
| SM18 | DFS owner function | 10.9.8 (Selecting and advertising a new channel) | (CF2.2 and CF10):M | Yes  No  N/A  |
| SM19 | DFS owner recovery procedure | 10.9.8 (Selecting and advertising a new channel) | (CF2.2 and CF10):M | Yes  No  N/A  |
| SM20 | Channel switch procedure |  |  |  |
| SM20.1 | Transmission of channel switch announcement and channel switch procedure by an AP | 10.9.8 (Selecting and advertising a new channel) | (CF1 and CF10):M | Yes  No  N/A  |
| SM20.2 | Transmission of channel switch announcement and channel switch procedure by a STA | 10.9.8 (Selecting and advertising a new channel) | (CF2.1 and CF10):M | Yes  No  N/A  |
| SM20.3 | Reception of channel switch announcement and channel switch procedure by a STA | 10.9.8 (Selecting and advertising a new channel) | CF10:M | Yes  No  N/A  |

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| * **Operating Classes extensions** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
| RC1 | Operating and coverage classes | 8.4.2.9 (Country element) | CF8&CF11:M | Yes  No  N/A  |
| RC2 | Operating and coverage classes (20 MHz channel spacing) | 8.4.2.9 (Country element), 18.3.8.6 (Slot time) | CF8&CF11:M | Yes  No  N/A  |
| RC3 | Operating and coverage classes (10 MHz channel spacing) | 8.4.2.9 (Country element), 18.3.8.6 (Slot time) | CF8&CF11& OF1.7:M | Yes  No  N/A  |
| RC4 | Operating and coverage classes (5 MHz channel spacing) | 8.4.2.9 (Country element), 18.3.8.6 (Slot time) | CF8&CF11& OF1.8:M | Yes  No  N/A  |
| RC5 | Coverage classes 0–31 | 9.19.5 (Operation with coverage classes) | CF15:M | Yes  No  N/A  |
|  | Coverage class operation when not associated | 9.19.5 (Operation with coverage classes) | CF15:M | Yes  No  N/A  |
| RC6 | Power level, equivalent maximum transmit power level and operating class | 9.19.5 (Operation with coverage classes) | CF15:M | Yes  No  N/A  |
|  | Power level operation when not associated | 9.19.5 (Operation with coverage classes) | CF15:M | Yes  No  N/A  |
| RC7 | Power level, different maximum transmit power level and operating class | 9.19.5 (Operation with coverage classes) | CF15:M | Yes  No  N/A  |
|  | Power level operation when not associated | 9.19.5 (Operation with coverage classes) | CF15:M | Yes  No  N/A  |

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| * **QoS base functionality** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
| QB1 | QoS frame format |  |  |  |
| QB1.1(11ad) | QoS frame format | 8.3.1.2 (RTS frame format)–8.3.1.4 (Ack frame format), 8.3.2.1 (Data frame format), 8.3.3.2 (Beacon frame format), 8.3.3.5 (Association Request frame format)–8.3.3.8 (Reassociation Response frame format), 8.3.3.10 (Probe Response frame format), 8.3.3.13 (Action frame format) | CF27&CF12:M | Yes  No  N/A  |
| QB1.2(11ad) | QoS frame format | 8.3.1.2 (RTS frame format), 8.3.1.4 (Ack frame format), 8.3.1.8 (BlockAckReq frame format), 8.3.1.9 (BlockAck frame format), 8.3.1.11 (Poll frame format)–8.3.1.19 (Grant Ack frame format), 8.3.2.1 (Data frame format), 8.3.4.1 (DMG Beacon), 8.3.3.5 (Association Request frame format)–8.3.3.8 (Reassociation Response frame format), 8.3.3.10 (Probe Response frame format), 8.3.3.13 (Action frame format) | CF28:M | Yes  No  N/A  |
| QB2 | Per traffic identifier (TID) -duplicate detection | 8.2.4.4 (Sequence Control field), 8.2.4.5 (QoS Control field), 9.3.2.10 (Duplicate detection and recovery) | CF12 OR CF25(11ad):M | Yes  No  N/A  |
| QB3 | Decode of no-acknowledgment policy in QoS (#100)Data frames | 8.2.4.5.4 (Ack Policy subfield), 9.20.2.4 (Multiple frame transmission in an EDCA TXOP), 9.20.2.5 (EDCA backoff procedure), 9.20.4.2 (Contention-based admission control procedures), 9.20.4.3 (Controlled-access admission control) | CF12 OR CF25(11ad):M | Yes  No  N/A  |
| QB4 | Block Acknowledgments (Block Acks) |  |  |  |
| QB4.1 | Immediate Block Ack | 8.3.1.8.1 (Overview), 8.3.1.8.2 (Basic BlockAckReq variant), 8.3.1.9.1 (Overview), 8.3.1.9.2 (Basic BlockAck variant),  8.6.5 (Block Ack Action frame details), 9.22 (Block Acknowledgment (Block Ack)) (except 9.22.7 (HT-immediate Block Ack extensions) and 9.22.8 (HT-delayed Block Ack extensions)), 10.5 (Block Ack operation) | CF12:O  CF16 OR CF25(11ad):M | Yes  No  N/A  |
| \*QB4.2(#346) | Delayed Block Ack | 8.3.1.8.1 (Overview), 8.3.1.8.2 (Basic BlockAckReq variant), 8.3.1.9.1 (Overview), 8.3.1.9.2 (Basic BlockAck variant),  8.6.5 (Block Ack Action frame details), 9.22 (Block Acknowledgment (Block Ack)) (except 9.22.7 (HT-immediate Block Ack extensions) and 9.22.8 (HT-delayed Block Ack extensions)), 10.5 (Block Ack operation) | CF12:O | Yes  No  N/A  |
| QB4.3 | Compressed Block Ack |  |  |  |
| QB4.3.1(11ad) | Compressed Block Ack | 8.3.1.8.3 (Compressed BlockAckReq variant) | CF12:O  CF16 OR CF25:M | Yes  No  N/A  |
| QB4.3.2(11ad) | Extended Compressed Block Ack | 8.3.1.8.4 (Extended Compressed BlockAckReq variant) | CF25:O | Yes  No  N/A  |
| QB4.4 | MultiTID Block Ack | 8.3.1.9.4 (Multi-TID BlockAck variant) | CF12:O  CF16: M | Yes  No  N/A  |
| QB5 | Automatic power save delivery (APSD) | 8.6.3 (QoS Action frame details), 10.2.2 (Power management in a non-DMG infrastructure network) | (CF1 and CF12):O (CF2 and CF12):O | Yes  No  N/A  |
| QB6 | Direct-link setup (DLS) | 8.4.2.18 (Channel Switch Announcement element), 8.6.4 (DLS Action frame details), 6.3.14 (Measurement request), 10.7 (DLS operation) | (CF1 AND CF12):M  (CF2.1 AND CF12):O | Yes  No  N/A  |

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| * **QoS enhanced distributed channel access (EDCA)** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
| QD1 | Support for four transmit queues with a separate channel access entity associated with each | 9.2.4.2 (HCF contention-based channel access (EDCA)), 9.20.2.1 (Reference implementation) | CF27&(11ad)CF12:M | Yes  No  N/A  |
| QD2 | Per-channel access function -differentiated channel access | 9.20.2.2 (EDCA TXOPs), 9.20.2.3 (Obtaining an EDCA TXOP), 9.20.2.5 (EDCA backoff procedure) | CF27&(11ad)CF12:M | Yes  No  N/A  |
| QD3 | Multiple frame transmission -support | 9.20.2.4 (Multiple frame transmission in an EDCA TXOP) | CF12 OR CF25(11ad):O | Yes  No  N/A  |
| QD4 | Maintenance of within-queue ordering, exhaustive -retransmission when sending non‑QoS (#100)Data frames | 9.20.2.6 (Retransmit procedures) | CF12 OR CF25(11ad):M | Yes  No  N/A  |
| QD5 | Interpretation of admission -control mandatory (ACM) bit in EDCA Parameter Set element | 8.4.2.12 (Extended Supported Rates element), 9.20.4.2 (Contention-based admission control procedures) | (CF2.1 & (CF12 OR CF25)(11ad)):M  (CF2.4.2 & CF25): | Yes  No  N/A  |
| QD6 | Contention-based admission -control | 9.20.4.2 (Contention-based admission control procedures), 8.4.2.13 (Power Constraint element), 8.4.2.14 (Power Capability element), 8.6.3.2 (Basic and DMG ADDTS Request frame format)–8.6.3.4 (DELTS frame format), 10.4 (TS operation) | (CF1 & (CF12 OR CF25)(11ad)):O  (CF2.1 & (CF12 OR CF25)(11ad)):O  (CF2.4.1 & CF25):O(11ad)  (CF2.4.2 & CF25):O(11ad) | Yes  No  N/A  |
| QD7 | Power management in an infrastructure BSS or in an IBSS | 10.2 (Power management) | (CF1 and CF12):O (CF2 and CF12):O | Yes  No  N/A  |
| QD8 | Default EDCA parameters for communications outside context of BSS(11ad) | 8.4.2.28 (EDCA Parameter Set element), 9.20.2.2 (EDCA TXOPs) | CF2.3:M | Yes  No  N/A  |

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| * **QoS hybrid coordination function (HCF)  controlled channel access (HCCA)** | | | | |
| **Item** | **Protocol Capability** | **References** | **Status** | **Support** |
| QP1 | Traffic specification (TSPEC) and associated frame formats | 8.6.3 (QoS Action frame details) | (CF1 and CF12):M (CF2 and CF12):M | Yes  No  N/A  |
| QP2 | HCCA rules | 9.2.4.3 (HCF controlled channel access (HCCA)), 9.20.3 (HCCA), 9.20.3.2 (HCCA procedure)–9.20.3.5 (HCCA transfer rules) | (CF1 and CF12):M (CF2 and CF12):M | Yes  No  N/A  |
| QP3 | HCCA schedule generation and management | 9.20.4 (Admission Control at the HC) | (CF1 & CF12):M | Yes  No  N/A  |
| QP4 | HCF frame exchange sequences | 9.20.2 (HCF contention-based channel access (EDCA)), 9.4.3 (PCF access procedure) | (CF1 and CF12):M (CF2 and CF12):M | Yes  No  N/A  |
| QP5 | Traffic stream (TS) management | 10.4 (TS operation) | (CF1 and CF12):M (CF2 and CF12):M | Yes  No  N/A  |
| QP6 | Minimum TSPEC parameter set | 9.20.4 (Admission Control at the HC) | (CF1 and CF12):M (CF2 and CF12):M | Yes  No  N/A  |
| QP7 | Power management in an infrastructure BSS | 10.2.2.5 (Power management with APSD), 10.2.2.6 (AP operation during the CP), 10.2.2.7 (AP operation during the CFP), 10.2.2.8 (Receive operation for STAs in PS mode during the CP), 10.2.2.9 (Receive operation for STAs in PS mode during the CFP), 10.2.2.10 (Receive operation using APSD), 10.2.2.11 (STAs operating in the Active mode) | (CF1 and CF12):M (CF2 and CF12):M | Yes  No  N/A  |

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| * **Radio Management extensions** | | | | |
| **Item** | **Protocol Capability** | **References** | **Status** | **Support** |
|  | Are the following Radio Measurement capabilities supported? |  |  |  |
| RM1 | Radio Measurement Capability | 8.4.1.4 (Capability Information field) | CF13:M | Yes  No  N/A  |
| RM2 | Action frame protocol for measurements | 8.6 (Action frame format details) | CF13:M | Yes  No  N/A  |
| RM2.1 | Radio Measurement Request frame | 8.6.7.2 (Radio Measurement Request frame format) | CF13:M | Yes  No  N/A  |
| RM2.2 | Radio Measurement Report frame | 8.6.7.3 (Radio Measurement Report frame format) | CF13:M | Yes  No  N/A  |
| RM2.3 | Link Measurement Request frame | 8.6.7.4 (Link Measurement Request frame format) | CF13:M | Yes  No  N/A  |
| RM2.4 | Link Measurement Report frame | 8.6.7.5 (Link Measurement Report frame format) | CF13:M | Yes  No  N/A  |
| RM2.4.1(11ad) | Link Measurement Report frame | 8.6.7.5 (Link Measurement Report frame format) | CF27&CF13:M | Yes  No  N/A  |
| RM2.4.2(11ad) | Link Measurement Report frame | 8.6.7.5 (Link Measurement Report frame format), 8.4.2.148 (Relay Transfer Parameter Set element), 8.4.2.149 (Quiet Period Request element), 9.38 (DMG link adaptation) | CF28&CF13:M | Yes  No  N/A  |
| RM2.5 | Neighbor Report Request |  |  |  |
| RM2.5.1 | Generate and transmit Neighbor Report Request | 8.6.7.6 (Neighbor Report Request frame format) | (CF13 AND CF2.1):M | Yes  No  N/A  |
| RM2.5.2 | Receive and process Neighbor Report Request | 8.6.7.6 (Neighbor Report Request frame format) | (CF13 AND CF1):M | Yes  No  N/A  |
| RM2.6 | Neighbor Report Response |  |  |  |
| RM2.6.1 | Generate and transmit Neighbor Report Response | 8.6.7.7 (Neighbor Report Response frame format), 8.4.2.36 (Neighbor Report element) | (CF13 AND CF1):M | Yes  No  N/A  |
| RM2.6.2 | Receive and process Neighbor Report Response | 7.4.8.6.7.7 (Neighbor Report Response frame format), 8.4.2.36 (Neighbor Report element) | (CF13 AND CF2.1):M | Yes  No  N/A  |
| RM3 | General protocol for requesting and reporting of measurements | 8.4.2.20 (Measurement Request element), 8.4.2.21 (Measurement Report element), 10.11 (Radio measurement procedures), 10.11.6 (Requesting and reporting of measurements) | CF13:M | Yes  No  N/A  |
| RM3.1 | Parallel Measurements | 8.4.2.20 (Measurement Request element), 10.11.6 (Requesting and reporting of measurements), 8.4.2.21 (Measurement Report element) | CF13:M | Yes  No  N/A  |
| RM3.2 | Use of Enable, Request and Report bits to enable/disable measurement requests and triggered autonomous reports Measurement Requests | 8.4.2.20 (Measurement Request element), 10.11.8 (Triggered autonomous reporting), 10.11.6 (Requesting and reporting of measurements) | CF13:M | Yes  No  N/A  |
| RM3.3 | Enable Autonomous Report | 8.4.2.20 (Measurement Request element), 10.11.8 (Triggered autonomous reporting) | CF13:M | Yes  No  N/A  |
| RM3.4 | Duration Mandatory | 8.4.2.20 (Measurement Request element), 10.11.4 (Measurement Duration) | CF13:M | Yes  No  N/A  |
| RM3.5 | Incapable Indication | 8.4.2.21 (Measurement Report element) | CF13:M | Yes  No  N/A  |
| RM3.6 | Refused Indication | 8.4.2.21 (Measurement Report element), 10.11.5 (Station responsibility for conducting measurements) | CF13:M | Yes  No  N/A  |
| RM3.7 | Repeated Measurement | 8.6.7.2 (Radio Measurement Request frame format), 10.11.7 (Repeated Measurement Request frames) | CF13:M | Yes  No  N/A  |
| RM3.8 | Measurement pause | 8.4.2.20.12 (Measurement pause request), 10.11.9.7 (Measurement pause) | CF13:M | Yes  No  N/A  |
| RM4 | Beacon Measurement Type | 10.11 (Radio measurement procedures), 10.11.9.1 (Beacon report) | CF13:M | Yes  No  N/A  |
| RM4.1 | Beacon (#1294)request | 8.4.2.20.7 (Beacon Request) | CF13:M | Yes  No  N/A  |
| RM4.2 | Passive Measurement mode | 8.4.2.20.7 (Beacon Request), 10.11.9.1 (Beacon report) | CF13:M | Yes  No  N/A  |
| RM4.3 | Active Measurement mode | 8.4.2.20.7 (Beacon Request), 10.11.9.1 (Beacon report) | CF13:M | Yes  No  N/A  |
| RM4.4 | Beacon table mode | 8.4.2.20.7 (Beacon Request), 10.11.9.1 (Beacon report) | CF13:M | Yes  No  N/A  |
| RM4.5 | Reporting Conditions | 8.4.2.20.7 (Beacon Request) | CF13:O | Yes  No  N/A  |
| RM4.6 | Beacon (#1294)report | 8.4.2.20.7 (Beacon Request) | CF13:M | Yes  No  N/A  |
| RM4.7 | Reporting Detail | 8.4.2.20.7 (Beacon Request), 8.4.2.21.7 (Beacon report), 8.4.2.35 (AP Channel Report element) | CF13:O | Yes  No  N/A  |
| \* RM5 | Frame Measurement Type | 10.11 (Radio measurement procedures), 10.11.9.2 (Frame report) | CF13:O | Yes  No  N/A  |
| RM5.1 | Frame request | 8.4.2.20.8 (Frame request) | (CF13 AND RM5):M | Yes  No  N/A  |
| RM5.2 | Frame (#1294)report | 8.4.2.21.8 (Frame report) | (CF13 AND RM5):M | Yes  No  N/A  |
| RM6 | Channel Load Measurement Type | 10.11 (Radio measurement procedures), 10.11.9.3 (Channel Load report) | CF13:M | Yes  No  N/A  |
| RM6.1 | Channel Load (#1294)request | 8.4.2.20.5 (Channel Load request) | CF13:M | Yes  No  N/A  |
| RM6.2 | Channel Load (#1294)report | 8.4.2.21.5 (Channel Load report) | CF13:M | Yes  No  N/A  |
| RM7 | Noise Histogram Measurement Type | 10.11 (Radio measurement procedures), 10.11.9.4 (Noise Histogram report) | CF13:M | Yes  No  N/A  |
| RM7.1 | Noise Histogram (#1294)request | 8.4.2.20.6 (Noise Histogram Request) | CF13:M | Yes  No  N/A  |
| RM7.2 | Noise Histogram (#1294)report | 8.4.2.21.6 (Noise Histogram report) | CF13:M | Yes  No  N/A  |
| RM8 | STA Statistics Measurement Type | 10.11 (Radio measurement procedures), 10.11.9.5 (STA Statistics report) | CF13:M | Yes  No  N/A  |
| RM8.1 | STA Statistics (#1294)request | 8.4.2.20.9 (STA Statistics request) | CF13:M | Yes  No  N/A  |
| RM8.2 | STA Statistics (#1294)report | 8.4.2.21.9 (STA Statistics report) | CF13:M | Yes  No  N/A  |
| RM9 | LCI Measurement Type | 10.11 (Radio measurement procedures), 10.11.9.6 (Location Configuration Information Report) | CF13:M | Yes  No  N/A  |
| RM9.1 | LCI (#1294)request | 8.4.2.20.10 (Location Configuration Request) | CF13:M | Yes  No  N/A  |
| RM9.1.1 | Location Subject | 8.4.2.20.10 (Location Configuration Request) | CF13:M | Yes  No  N/A  |
| RM9.1.1.1 | Location Subject third party | 8.4.2.20.10 (Location Configuration Request) | CF13:O | Yes □ No □ N/A □ |
| RM9.1.2 | Latitude Requested Resolution | 8.4.2.20.10 (Location Configuration Request) | CF13:M | Yes  No  N/A  |
| RM9.1.3 | Longitude Requested Resolution | 8.4.2.20.10 (Location Configuration Request) | CF13:M | Yes  No  N/A  |
| RM9.1.4 | Altitude Requested Resolution | 8.4.2.20.10 (Location Configuration Request) | CF13:M | Yes  No  N/A  |
| RM9.2 | LCI (#1294)report | 8.4.2.21.10 (Location Configuration Information report) | CF13:M | Yes  No  N/A  |
| RM9.3 | Azimuth | 10.11 (Radio measurement procedures), 10.11.9.6 (Location Configuration Information Report) | CF13:O | Yes  No  N/A  |
| RM9.3.1 | Azimuth Request | 8.4.2.20.10 (Location Configuration Request) | CF13:O | Yes  No  N/A  |
| RM9.3.2 | Azimuth Response | 8.4.2.21.10 (Location Configuration Information report) | CF13:O | Yes  No  N/A  |
| \*RM10 | Transmit Stream/Category Measurement Type | 10.11 (Radio measurement procedures), 10.11.9.8 (Transmit Stream/Category Measurement report) | (CF13 AND (CF12 OR CF25)(11ad)):O | Yes  No  N/A  |
| RM10.1 | Transmit Stream/Category Measurement (#1294)request | 8.4.2.20.11 (Transmit Stream/Category Measurement request) | RM10:M | Yes  No  N/A  |
| RM10.2 | Transmit Stream/Category Measurement (#1294)report | 8.4.2.21.11 (Transmit Stream/Category Measurement report) | RM10:M | Yes  No  N/A  |
| RM10.3 | Triggered Transmit Stream/Category Measurement (#1294)report | 8.4.2.21.11 (Transmit Stream/Category Measurement report), 10.11.9.8 (Transmit Stream/Category Measurement report) | RM10:O | Yes  No  N/A  |
| RM11 | AP Channel (#1294)report | 8.4.2.9 (Country element), 8.4.2.35 (AP Channel Report element) | (CF13 AND CF1):M | Yes  No  N/A  |
| RM11.1 | Generate and transmit AP Channel (#1294)report | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.35 (AP Channel Report element) | (CF13 AND CF1):M | Yes  No  N/A  |
| RM11.2 | Receive and process AP Channel (#1294)report | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.35 (AP Channel Report element) | (CF13 AND CF2.1):M | Yes  No  N/A  |
| RM12 | Neighbor (#1294)report procedure | 10.11 (Radio measurement procedures), 10.11.10 (Usage of the neighbor report) | CF13:M | Yes  No  N/A  |
| RM12.1 | Neighbor (#1294)report procedure | 10.11.10.2 (Requesting a neighbor report), 10.11.10.3 (Receiving a neighbor report) | CF13:M | Yes  No  N/A  |
| RM12.2 | TSF Offset in Neighbor (#1294)report | 8.4.2.36 (Neighbor Report element), 10.11.10.3 (Receiving a neighbor report) | CF13:O | Yes  No  N/A  |
| RM13 | RCPI Measurement |  |  |  |
| RM13.1 | RCPI Measurement for DSSS PHY at 2.4 GHz | 16.4.6.6 (Received Channel Power Indicator Measurement) | (CF13 AND CF4):M | Yes  No  N/A  |
| RM13.2 | RCPI Measurement for OFDM PHY at 5 GHz | 18.2.3.6 (RXVECTOR RCPI), 18.3.10.7 (Received Channel Power Indicator Measurement)(#61) | (CF13 AND CF6):M | Yes  No  N/A  |
| RM13.3 | RCPI Measurement for HR DSSS PHY at 2.4 GHz | (#61)17.3.8.6 (Received Channel Power Indicator Measurement) | (CF13 AND CF7):M | Yes  No  N/A  |
| RM13.4 | RCPI Measurement for Extended Rate PHY at 2.4 GHz | 19.2 (PHY-specific service parameter list)(#61) | (CF13 AND CF9):M | Yes  No  N/A  |
| RM14 | RCPI Measurement during Active Scanning |  |  |  |
| RM14.1 | Respond with RCPI element when requested | 10.1.4.3.2 (Active scanning procedure) | (CF13 AND (CF12 OR CF25(11ad)) AND CF1):M | Yes  No  N/A  |
| RM14.2 | Measurement of RCPI on Probe Request frames | 10.1.4.3.2 (Active scanning procedure) | (CF13 AND (CF12 OR CF25(11ad)) AND CF1):O | Yes  No  N/A  |
| RM15 | RSNI Measurement | 8.4.2.40 (RSNI element) | (CF13 AND RM13):M | Yes  No  N/A  |
| RM16 | TPC Information in Beacon and Probe Response frames |  |  |  |
| RM16.1 | Country and TPC Report elements included in Beacon and Probe Response frames | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.9 (Country element), 8.4.2.16 (TPC Report element), 10.8 (TPC procedures) | CF13:M | Yes  No  N/A  |
| RM16.2 | Power Constraint element included in Beacon and Probe Response frames | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.13 (Power Constraint element) | CF13:O | Yes  No  N/A  |
| RM17 | Power Capability elements in Association and Reassociation frames | 8.3.3.5 (Association Request frame format), 8.3.3.6 (Association Response frame format), 10.9.2 (Association based on supported channels) | CF13:M | Yes  No  N/A  |
| RM18 | Management Information Base |  |  |  |
| RM18.1 | dot11RadioMeasurement | Annex C | (CF13 AND CF1):M | Yes  No  N/A  |
| RM18.2 | dot11SMTRMRequest | Annex C | (CF13 AND CF1):O | Yes  No  N/A  |
| RM18.3 | dot11SMTRMReport | Annex C | (CF13 AND CF1):O | Yes  No  N/A  |
| RM18.4 | dot11SMTRMConfig | Annex C | (CF13 AND CF1):O | Yes  No  N/A  |
| RM19 | Measurement Pilot Frame | 8.4.1.18 (Measurement Pilot Interval field), 8.4.2.45 (Multiple BSSID element), 6.3.32 (Neighbor report request), 10.8 (TPC procedures), 10.11.14 (Multiple BSSID Set), 10.11.15 (Measurement Pilot generation and usage) | CF13:O | Yes  No  N/A  |
| RM20 | BSS Average Access Delay elements included in Beacon and Probe Response frames | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.38 (BSS Average Access Delay element) | (CF1AND CF13):M | Yes  No  N/A  |
| RM21 | Antenna elements included in Beacon and Probe Response frames | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.39 (Antenna element) | CF13:M | Yes  No  N/A  |
| RM22 | Measurement Pilot Transmission element and Multiple BSSID element, if required, included in Probe Response frame | 8.3.3.10 (Probe Response frame format), 8.4.2.41 (Measurement Pilot Transmission element), 8.4.2.45 (Multiple BSSID element) | CF13:O | Yes  No  N/A  |
| RM23 | Quiet interval |  |  |  |
| RM23.1 | AP-defined Quiet Interval | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.22 (Quiet element), 10.9.3 (Quieting channels for testing) | (CF1 AND CF13):M | Yes  No  N/A  |
| RM23.2 | STA-defined Quiet Interval | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.22 (Quiet element), 10.9.3 (Quieting channels for testing) | (CF2.1 AND CF13):M | Yes  No  N/A  |
| RM23.3 | STA support for Quiet Interval | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.22 (Quiet element), 10.9.3 (Quieting channels for testing) | CF13:M | Yes  No  N/A  |
| RM24 | BSS Available Admission Capacity | 8.4.2.42 (BSS Available Admission Capacity element) | (CF1 AND (CF12 OR CF25(11ad)) AND CF13):M | Yes  No  N/A  |
| RM25 | BSS AC Access Delay | 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.4.2.43 (BSS AC Access Delay element) | CF27&(11ad)(CF1 AND CF12 AND CF13):M | Yes  No  N/A  |
| RM26(11ad) | BSS AC Access Delay | 8.3.4.1 (DMG Beacon), 8.3.3.10 (Probe Response frame format), 8.4.2.43 (BSS AC Access Delay element) | CF28&CF1 AND CF13:M | Yes  No  N/A  |
| RM27(11ad) | Directional channel quality measurement | 10.11 (Radio measurement procedures), 10.32 (Spatial sharing and interference mitigation for DMG STAs) |  |  |
| RM27.1(11ad) | Directional Channel Quality Request | 8.4.2.23.16, 10.32 (Spatial sharing and interference mitigation for DMG STAs) | (CF13 AND DMG-M19):O | Yes  No  N/A  |
| RM27.2(11ad) | Directional Channel Quality Response | 8.4.2.24.15, 10.32 (Spatial sharing and interference mitigation for DMG STAs) | (CF13 AND DMG-M19):M | Yes  No  N/A  |
| RM28(11ad) | Directional measurement type | 10.11 (Radio measurement procedures) |  |  |
| RM28.1(11ad) | Directional Measurement Request | 8.4.2.20.17 (Directional measurement request) | (CF13 AND CF25):O | Yes  No  N/A  |
| RM28.2(11ad) | Directional Measurement Response | 8.4.2.21.16 (Directional measurement report) | (CF13 AND CF25):O | Yes  No  N/A  |
| RM29(11ad) | Directional statistics measurement type | 10.11 (Radio measurement procedures) |  |  |
| RM29.1(11ad) | Directional Statistics Measurement Type | 8.4.2.20.18 (Directional statistics request) | (CF13 AND CF25):O | Yes  No  N/A  |
| RM29.2(11ad) | Directional Statistics Measurement Type | 8.4.2.21.17 (Directional statistics report) | (CF13 AND CF25):O | Yes  No  N/A  |

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| * **DSE functions** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
| \*DSE1 | Fixed STA operation with RegLoc | 10.12.3 (Registered STA operation) | CF15:O.1 | Yes  No  N/A  |
| \*DSE2 | Enabling STA operation with RegLoc | 10.12.3 (Registered STA operation) | CF15:O.1 | Yes  No  N/A  |
| DSE2.1 | Enabling STA creation of DSE service area | 10.12.4 (Enabling STA operation with DSE) | DSE2:M | Yes  No  N/A  |
| DSE2.2 | Enabling STA operation with DSE | 10.12.3 (Registered STA operation) | DSE2:M | Yes  No  N/A  |
| \*DSE3 | Dependent STA operation with DSE | 10.12.5 (Dependent STA operation with DSE) | CF15:O.1 | Yes  No  N/A  |
| DSE3.1 | Dependent STA enablement | 10.12.5 (Dependent STA operation with DSE) | DSE3:M | Yes  No  N/A  |
| DSE3.2 | Dependent STA DSE time to enablement | 10.12.5 (Dependent STA operation with DSE) | DSE3:M | Yes  No  N/A  |
| DSE3.3 | Dependent STA DSE time to not transmit | 10.12.5 (Dependent STA operation with DSE) | DSE3:M | Yes  No  N/A  |
| DSE3.4 | Dependent STA DSE Registered Location Announcement frame | 10.12.5 (Dependent STA operation with DSE) | DSE3:M | Yes  No  N/A  |
| DSE3.5 | Dependent STA MLME-ASSOCIATE.response primitive DSE | 6.3.7.5 (MLME-ASSOCIATE.response) | DSE3:M | Yes  No  N/A  |
| DSE3.6 | Dependent STA MLME-REASSOCIATE.response primitive DSE | 6.3.8.5 (MLME-REASSOCIATE.response) | DSE3:M | Yes  No  N/A  |
| DSE4 | DSE request report procedure  Transmission of DSE measurement request by an AP  Transmission of DSE measurement report by a STA | 10.12.5 (Dependent STA operation with DSE)  10.12.5 (Dependent STA operation with DSE) | (CF15&CF1):M  (CF15&CF2.1):M | Yes  No  N/A   Yes  No  N/A  |
| DSE5 | STA association procedure  Transmission of Association Request frame with Supported Operating Classes element by a STA  Transmission of Association Response frame with Supported Operating Classes element by an AP | 9.19.4 (Operation with operating classes), 10.3.5.2 (Non-PCP/Non-AP STA association initiation procedures)  9.19.4 (Operation with operating classes), 10.3.5.3 (PCP/AP association receipt procedures) | (CF15&CF2.1):M  (CF15&CF1):M | Yes  No  N/A   Yes  No  N/A  |
| DSE6 | STA reassociation procedure  Transmission of Reassociation Request frame with Supported Operating Classes element by a STA  Transmission of Reassociation Response frame with Supported Operating Classes element by an AP | 9.19.4 (Operation with operating classes), 10.3.5.4 (Non-PCP/Non-AP STA reassociation initiation procedures)  9.19.4 (Operation with operating classes), 10.3.5.5 (PCP/AP reassociation receipt procedures) | (CF15&CF2.1):M  (CF15&CF1):M | Yes  No  N/A   Yes  No  N/A  |
| DSE7 | Probe request procedure  Transmission of Probe Request frame with Supported Operating Classes element by a STA | 10.10.1 (General) | CF15&CF2.1:M | Yes  No  N/A  |
| DSE8 | Probe response procedure  Transmission of Probe Response frame with Supported Operating Classes element by an AP | 10.10.1 (General) | CF15&CF1:M | Yes  No  N/A  |
| DSE9 | Extended channel switch procedure  Transmission of extended channel switch announcement and channel switch procedure by an AP  Transmission of extended channel switch announcement and channel switch procedure by a STA  Reception of extended channel switch announcement and channel switch procedure by a STA | 10.10.3 (Selecting and advertising a new channel and/or operating class)  10.10.3 (Selecting and advertising a new channel and/or operating class)  10.10.3 (Selecting and advertising a new channel and/or operating class) | (CF15&CF1):M  (CF15&CF2.1):M  CF15:M | Yes  No  N/A   Yes  No  N/A   Yes  No  N/A  |
| DSE10 | DSE power constraint procedure  Transmission of DSE power constraint announcement by an enabling STA  Reception of DSE power constraint announcement by a dependent STA | 10.12.5 (Dependent STA operation with DSE)  10.12.5 (Dependent STA operation with DSE) | (CF15&CF1):M    CF15:M | Yes No N/A   Yes No N/A  |

* **High throughput(#1533) (HT) features**

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| * **HT MAC features** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
|  | Are the following MAC protocol features supported? |  |  |  |
| HTM1 | HT capabilities signaling |  |  |  |
| HTM1.1 | HT Capabilities element | 8.4.2.55.1 (HT Capabilities element structure) | CF16:M | Yes  No  N/A  |
| HTM1.2 | Signaling of STA capabilities in Probe Request, (Re)Association Request frames | 8.4.2.55 (HT Capabilities element), 8.3.3.9 (Probe Request frame format), 8.3.3.5 (Association Request frame format), 8.3.3.7 (Reassociation Request frame format) | (CF16 and CF2):M | Yes  No  N/A  |
| HTM1.3 | Signaling of STA and BSS capabilities in Beacon, Probe Response, (Re)Association Response frames | 8.4.2.55 (HT Capabilities element), 8.3.3.2 (Beacon frame format), 8.3.3.10 (Probe Response frame format), 8.3.3.6 (Association Response frame format), 8.3.3.8 (Reassociation Response frame format) | (CF16 and CF1):M | Yes  No  N/A  |
| HTM2 | Signaling of HT operation | 8.4.2.56 (HT Operation element) | (CF16 and CF1):M | Yes  No  N/A  |
| HTM3 | MPDU aggregation |  |  |  |
| HTM3.1 | Reception of A-MPDU | 8.4.2.55.3 (A-MPDU Parameters field), 11.4 (RSNA confidentiality and integrity protocols), 9.12.2 (A-MPDU length limit rules) | CF16:M | Yes  No  N/A  |
| HTM3.2 | A-MPDU format | 8.7.1 (A-MPDU format) | CF16:M | Yes  No  N/A  |
| HTM3.3 | A-MPDU contents | 8.7.3 (A-MPDU contents) | CF16:M | Yes  No  N/A  |
| HTM3.4 | A-MPDU frame exchange sequences | 9.20.2.4 (Multiple frame transmission in an EDCA TXOP) | CF16:M | Yes  No  N/A  |
| HTM3.5 | Transmission of A-MPDU | 8.4.2.55.3 (A-MPDU Parameters field), 11.4 (RSNA confidentiality and integrity protocols) | CF16:O | Yes  No  N/A  |
| HTM4 | MSDU aggregation |  |  |  |
| HTM4.1 | Reception of A-MSDUs | 8.2.4.5 (QoS Control field), 8.3.2.2 (Aggregate MSDU (A-MSDU) format) | CF16:M | Yes  No  N/A  |
| HTM4.2 | A-MSDU format | 8.3.2.2 (Aggregate MSDU (A-MSDU) format) | CF16:M | Yes  No  N/A  |
| HTM4.3 | A-MSDU content | 8.3.2.2 (Aggregate MSDU (A-MSDU) format) | CF16:M | Yes  No  N/A  |
| HTM4.4 | Transmission of A-MSDUs | 8.3.2.2 (Aggregate MSDU (A-MSDU) format), 8.2.4.5 (QoS Control field) | CF16:O | Yes  No  N/A  |
| HTM5 | Block Ack |  |  |  |
| HTM5.1 | Block Ack mechanism | 8.3.1.8 (BlockAckReq frame format), 8.3.1.9 (BlockAck frame format), 8.4.1.14 (Block Ack Parameter Set field), 9.22 (Block Acknowledgment (Block Ack)), 10.16 (20/40 MHz BSS operation) | CF16:M | Yes  No  N/A  |
| HTM5.2 | Use of compressed bitmap between HT STAs | 8.3.1.9.3 (Compressed BlockAck variant), 9.22.6 (Selection of BlockAck and BlockAckReq variants), | CF16:M | Yes  No  N/A  |
| HTM5.3 | HT-immediate Block Ack extensions | 9.22.7 (HT-immediate Block Ack extensions) | CF16:M | Yes  No  N/A  |
| HTM5.4 | HT-delayed Block Ack extensions | 9.22.8 (HT-delayed Block Ack extensions) | CF16 and QB4.2:M | Yes  No  N/A  |
| HTM5.5 | Multiple TID Block Ack | 8.3.1.8.5 (Multi-TID BlockAckReq variant), 8.3.1.9.4 (Multi-TID BlockAck variant), 9.27.2.7 (PSMP acknowledgment rules) | PC37:M | Yes  No  N/A  |
| HTM6 | Protection mechanisms for different HT PHY options |  |  |  |
| HTM6.1 | Protection of RIFS PPDUs in the presence of non-HT STAs | 9.24.3.3 (RIFS protection) | CF16:M | Yes  No  N/A  |
| HTM6.2(Ed) | Protection of RIFS PPDUs in an IBSS | 9.24.3.3 (RIFS protection) | CF16:M | Yes  No  N/A  |
| HTM6.3(Ed) | Protection of HT-greenfield PPDUs in the presence of non-HT STAs | 9.24.3.1 (General) | HTP1.3:M | Yes  No  N/A  |
| HTM6.4(Ed) | Protection of HT-greenfield PPDUs in an IBSS | 9.24.3.1 (General) | CF16:M | Yes  No  N/A  |
| \*HTM7 | L-SIG TXOP protection mechanism | 9.24.5 (L-SIG TXOP protection) | CF16:O | Yes  No  N/A  |
| HTM7.1 | Update NAV according to L-SIG | 9.24.5.4 (L-SIG TXOP protection NAV update rule) | HTM7:M | Yes  No  N/A  |
| HTM8 | Duration/ID rules for A-MPDU and TXOP | 8.2.4.2 (Duration/ID field) | CF16:M(#187) | Yes  No  N/A  |
| HTM9 | Truncation of TXOP as TXOP holder | 9.20.2.7 (Truncation of TXOP) | CF16:O | Yes  No  N/A  |
| HTM10 | Reception of +HTC frames | 8.2.4.1.10 (Order field), 8.4.2.55.5 (HT Extended Capabilities field), 9.9 (HT Control field operation) | CF16:O | Yes  No  N/A  |
| \*HTM11 | Reverse direction (RD) aggregation exchanges | 9.26 (Reverse direction protocol) | CF16:O | Yes  No  N/A  |
| HTM11.1 | Constraints regarding responses | 9.26.5 (Rules for RD responder) | HTM11:M | Yes  No  N/A  |
| HTM12 | Link adaptation |  |  |  |
| HTM12.1 | Use of the HT Control field for link adaptation in immediate response exchange | 8.2.4.6 (HT Control field), 8.3.3.14 (Action No Ack frame format), 9.29.2 (Link adaptation using the HT Control field) | CF16:O | Yes  No  N/A  |
| HTM12.2 | Link adaptation using explicit feedback mechanism | 8.3.3.14 (Action No Ack frame format), 9.30.3 (Explicit feedback beamforming) | CF16:O | Yes  No  N/A  |
| HTM13 | Transmit beamforming |  |  |  |
| \*HTM13.1 | Transmission of beamformed PPDUs | 9.30 (Transmit beamforming) | CF16:O | Yes  No  N/A  |
| \*HTM13.2 | Reception of beamformed PPDUs | 9.30 (Transmit beamforming) | CF16:O | Yes  No  N/A  |
| \*HTM13.3 | Initiate transmit beamforming frame exchange with implicit feedback | 9.30.2 (Transmit beamforming with implicit feedback) | HTM13.1:O | Yes  No  N/A  |
| HTM13.3.1 | Reception of sounding PPDUs | 9.30.2 (Transmit beamforming with implicit feedback) | HTM13.3:M | Yes  No  N/A  |
| \*HTM13.4 | Response to transmit beamforming frame exchange with implicit feedback | 9.30.2 (Transmit beamforming with implicit feedback) | HTM13.2:O | Yes  No  N/A  |
| HTM13.4.1 | Transmission of sounding PPDUs | 9.30.2 (Transmit beamforming with implicit feedback) | HTM13.4:M | Yes  No  N/A  |
| \*HTM13.5 | Initiate transmit beamforming frame exchange with explicit feedback | 8.6.12.6 (CSI frame format), 9.30.3 (Explicit feedback beamforming) | HTM13.1:O | Yes  No  N/A  |
| HTM13.5.1 | Transmission of sounding PPDUs | 9.30.3 (Explicit feedback beamforming) | HTM13.5:M | Yes  No  N/A  |
| \*HTM13.6 | Respond to transmit beamforming frame exchange with explicit feedback | 9.30.3 (Explicit feedback beamforming) | HTM13.2:O | Yes  No  N/A  |
| HTM13.6.1 | Transmission of Action No Ack +HTC frame including Action payload of type CSI | 9.30.3 (Explicit feedback beamforming), 8.6.12.6 (CSI frame format) | HTM13.6:O.1 | Yes  No  N/A  |
| HTM13.6.2 | Transmission of Action No Ack +HTC frame including Action payload of type “Noncompressed beamforming” | 9.30.3 (Explicit feedback beamforming), 8.6.12.7 (Noncompressed Beamforming frame format) | HTM13.6:O.1 | Yes  No  N/A  |
| HTM13.6.3 | Transmission of Action No Ack +HTC frame including Action payload of type “Compressed beamforming” | 9.30.3 (Explicit feedback beamforming), 8.6.12.8 (Compressed Beamforming frame format) | HTM13.6:O.1 | Yes  No  N/A  |
| \*HTM13.7 | Calibration procedure | 8.3.3.14 (Action No Ack frame format), 9.30.2.4 (Calibration) | HTM13:O | Yes  No  N/A  |
| HTM14 | Antenna selection (ASEL) | 8.2.4.6 (HT Control field), 8.4.2.55.7 (ASEL Capability field), 8.6.12.9 (Antenna Selection Indices Feedback frame format), 9.31 (Antenna selection (ASEL)) | CF16:O | Yes  No  N/A  |
| \*HTM15 | Null data packet (NDP) | 9.32 (Null data packet (NDP) sounding) | CF16:O | Yes  No  N/A  |
| HTM16 | Space-time block coding (STBC) support |  |  |  |
| HTM16.1 | STBC beacon transmission | 10.1.3.2 (Beacon generation in non-DMG infrastructure networks) | HTP2.11:O | Yes  No  N/A  |
| HTM16.2 | Dual CTS protection | 9.3.2.7 (Dual CTS protection) | HTP2.11:O | Yes  No  N/A  |
| HTM17 | SM power save support |  |  |  |
| \*HTM17.1 | AP support for dynamic and static SM power save mode | 10.2.5 (SM power save) | (CF16 and CF1):M | Yes  No  N/A  |
| \*HTM17.2 | STA support for dynamic and static SM power save mode | 10.2.5 (SM power save) | (CF16 and CF2):O | Yes  No  N/A  |
| HTM17.3 | Transmit SM Power Save state information using HT capabilities, or SM Power Save frame | 8.6.12.3 (SM Power Save frame format), 10.2.5 (SM power save) | (HTM17.1 OR HTM17.2):M | Yes  No  N/A  |
| HTM17.4 | Receive SM Power Save state information and support frame exchanges with SM Power Save STAs | 10.2.5 (SM power save) | CF16:M | Yes  No  N/A  |
| HTM18 | Mechanisms for coexistence of 20 MHz and 40 MHz channels | 10.16 (20/40 MHz BSS operation) | CF16:M | Yes  No  N/A  |
| HTM19 | Channel selection methods for  20/40 MHz operation | 10.16.3 (Channel scanning and selection methods for 20/40 MHz operation) | (HTP2.3.4 and CF1):M | Yes  No  N/A  |
| HTM20 | 20/40 MHz operation | 10.16 (20/40 MHz BSS operation) | HTP2.3.4:M | Yes  No  N/A  |
| HTM21 | Phased coexistence operation (PCO) |  |  |  |
| \*HTM21.1 | PCO capability at AP | 10.17 (Phased coexistence operation (PCO)) | (CF16 and CF1):O | Yes  No  N/A  |
| HTM21.1.1 | Rules for operation at a PCO active AP | 8.6.12.5 (Set PCO Phase frame format), 10.17.2 (Operation at a PCO active AP) | HTM21.1:M | Yes  No  N/A  |
| \*HTM21.2 | STA support for PCO mode | 10.17 (Phased coexistence operation (PCO)) | (CF16 and CF2):O | Yes  No  N/A  |
| HTM21.2.1 | Rules for operation at PCO active STA | 8.6.12.5 (Set PCO Phase frame format), 10.17.3 (Operation at a PCO active non-AP STA) | HTM21.2:M | Yes  No  N/A  |
| HTM22 | Management information base (MIB) |  |  |  |
| HTM22.1 | dot11PhyHTComplianceGroup | Annex C | CF16:M | Yes  No  N/A  |
| HTM22.2 | dot11PhyMCSGroup | Annex C | CF16:M | Yes  No  N/A  |

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| * **HT PHY features** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
|  | Are the following PHY protocol features supported? |  |  |  |
| HTP1 | PHY operating modes |  |  |  |
| HTP1.1 | Operation according to 18 (Orthogonal frequency division multiplexing (OFDM) PHY specification) and/or Clause 19 (Extended Rate PHY (ERP) specification) | 20.1.4 (PPDU formats) | CF16:M | Yes  No  N/A  |
| HTP1.2 | HT-mixed format | 20.1.4 (PPDU formats) | CF16:M | Yes  No  N/A  |
| \*HTP1.3 | HT-greenfield format | 20.1.4 (PPDU formats) | CF16:O | Yes  No  N/A  |
| HTP2 | PHY(#61) frame format |  |  |  |
| HTP2.1 | HT-mixed format PPDU(#61) format | 20.3.2 (PPDU format) | CF16:M | Yes  No  N/A  |
| HTP2.2 | HT-greenfield PPDU(#61) format | 20.3.2 (PPDU format) | HTP1.3:M | Yes  No  N/A  |
| HTP2.3 | Modulation and coding schemes (MCS) |  |  |  |
| HTP2.3.1 | MCS 0 to MCS 7 in 20 MHz with 800 ns guard interval (GI) |  |  |  |
| HTP2.3.1.1 | Support for 20 MHz with 800 ns GI MCS index 0 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:M | Yes  No  N/A  |
| HTP2.3.1.2 | Support for 20 MHz with 800 ns GI MCS index 1 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:M | Yes  No  N/A  |
| HTP2.3.1.3 | Support for 20 MHz with 800 ns GI MCS index 2 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:M | Yes  No  N/A  |
| HTP2.3.1.4 | Support for 20 MHz with 800 ns GI MCS index 3 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:M | Yes  No  N/A  |
| HTP2.3.1.5 | Support for 20 MHz with 800 ns GI MCS index 4 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:M | Yes  No  N/A  |
| HTP2.3.1.6 | Support for 20 MHz with 800 ns GI MCS index 5 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:M | Yes  No  N/A  |
| HTP2.3.1.7 | Support for 20 MHz with 800 ns GI MCS index 6 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:M | Yes  No  N/A  |
| HTP2.3.1.8 | Support for 20 MHz with 800 ns GI MCS index 7 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:M | Yes  No  N/A  |
| HTP2.3.2 | MCS 8 to MCS 15 in 20 MHz with 800 ns GI |  |  |  |
| HTP2.3.2.1 | Support for 20 MHz with 800 ns GI MCS index 8 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | (CF16 and CF1):M | Yes  No  N/A  |
| HTP2.3.2.2 | Support for 20 MHz with 800 ns GI MCS index 9 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | (CF16 and CF1):M | Yes  No  N/A  |
| HTP2.3.2.3 | Support for 20 MHz with 800 ns GI MCS index 10 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | (CF16 and CF1):M | Yes  No  N/A  |
| HTP2.3.2.4 | Support for 20 MHz with 800 ns GI MCS index 11 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | (CF16 and CF1):M | Yes  No  N/A  |
| HTP2.3.2.5 | Support for 20 MHz with 800 ns GI MCS index 12 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | (CF16 and CF1):M | Yes  No  N/A  |
| HTP2.3.2.6 | Support for 20 MHz with 800 ns GI MCS index 13 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | (CF16 and CF1):M | Yes  No  N/A  |
| HTP2.3.2.7 | Support for 20 MHz with 800 ns GI MCS index 14 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | (CF16 and CF1):M | Yes  No  N/A  |
| HTP2.3.2.8 | Support for 20 MHz with 800 ns GI MCS index 15 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | (CF16 and CF1):M | Yes  No  N/A  |
| HTP2.3.3 | Transmit and receive support for 400 ns GI | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| \*HTP2.3.4 | Operation at 40 MHz | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5 | Support for MCS with indices 16 to 76 |  |  |  |
| HTP2.3.5.1 | Support for MCS with index 16 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.2 | Support for MCS with index 17 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.3 | Support for MCS with index 18 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.4 | Support for MCS with index 19 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.5 | Support for MCS with index 20 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.6 | Support for MCS with index 21 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.7 | Support for MCS with index 22 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.8 | Support for MCS with index 23 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.9 | Support for MCS with index 24 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.10 | Support for MCS with index 25 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.11 | Support for MCS with index 26 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.12 | Support for MCS with index 27 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.13 | Support for MCS with index 28 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.14 | Support for MCS with index 29 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.15 | Support for MCS with index 30 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.16 | Support for MCS with index 31 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.17 | Support for MCS with index 32 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.18 | Support for MCS with index 33 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.19 | Support for MCS with index 34 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.20 | Support for MCS with index 35 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.21 | Support for MCS with index 36 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.22 | Support for MCS with index 37 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.23 | Support for MCS with index 38 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.24 | Support for MCS with index 39 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.25 | Support for MCS with index 40 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.26 | Support for MCS with index 41 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.27 | Support for MCS with index 42 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.28 | Support for MCS with index 43 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.29 | Support for MCS with index 44 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.30 | Support for MCS with index 45 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.31 | Support for MCS with index 46 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.32 | Support for MCS with index 47 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.33 | Support for MCS with index 48 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.34 | Support for MCS with index 49 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.35 | Support for MCS with index 50 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.36 | Support for MCS with index 51 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.37 | Support for MCS with index 52 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.38 | Support for MCS with index 53 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.39 | Support for MCS with index 54 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.40 | Support for MCS with index 55 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.41 | Support for MCS with index 56 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.42 | Support for MCS with index 57 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.43 | Support for MCS with index 58 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.44 | Support for MCS with index 59 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.45 | Support for MCS with index 60 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.46 | Support for MCS with index 61 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.47 | Support for MCS with index 62 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.48 | Support for MCS with index 63 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.49 | Support for MCS with index 64 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.50 | Support for MCS with index 65 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.51 | Support for MCS with index 66 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.52 | Support for MCS with index 67 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.53 | Support for MCS with index 68 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.54 | Support for MCS with index 69 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.55 | Support for MCS with index 70 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.56 | Support for MCS with index 71 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.57 | Support for MCS with index 72 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.58 | Support for MCS with index 73 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.59 | Support for MCS with index 74 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.60 | Support for MCS with index 75 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.3.5.61 | Support for MCS with index 76 | 20.3.5 (Modulation and coding scheme (MCS)), 20.5 (Parameters for HT MCSs) | CF16:O | Yes  No  N/A  |
| HTP2.4 | PHY timing parameters |  |  |  |
| HTP2.4.1 | Values in non-HT 20 MHz channel | 20.3.6 (Timing-related parameters) | CF16:M | Yes  No  N/A  |
| HTP2.4.2 | Values in 20 MHz HT channel | 20.3.6 (Timing-related parameters) | CF16:M | Yes  No  N/A  |
| HTP2.4.3 | Values in 40 MHz channel | 20.3.6 (Timing-related parameters) | HTP2.3.4:M | Yes  No  N/A  |
| HTP2.5 | HT Preamble field definition and coding |  |  |  |
| HTP2.5.1 | HT-mixed format preamble | 20.3.9.2 (HT-mixed format preamble) | CF16:M | Yes  No  N/A  |
| HTP2.5.2 | HT-greenfield preamble | 20.3.9.5 (HT-greenfield format preamble) | HTP1.3:M | Yes  No  N/A  |
| HTP2.5.3 | Extension HT Long Training fields (HT-ELTFs) | 20.3.9.4.6 (HT-LTF definition) | CF16:O | Yes  No  N/A  |
| HTP2.6 | HT Data field definition and coding | 20.3.11 (Data field) | CF16:M | Yes  No  N/A  |
| HTP2.6.1 | Use of LDPC codes | 20.3.11.7 (LDPC codes) | CF16:O | Yes  No  N/A  |
| HTP2.7 | Beamforming | 20.3.12 (Beamforming) | CF16:O | Yes  No  N/A  |
| HTP2.8 | Sounding PPDUs |  |  |  |
| HTP2.8.1 | HT preamble format for sounding PPDUs | 20.3.13 (HT Preamble format for sounding PPDUs) | CF16:O | Yes  No  N/A  |
| HTP2.8.2 | Sounding with an NDP | 20.3.13.2 (Sounding with a NDP) | HTM15:O | Yes  No  N/A  |
| HTP2.8.3 | Sounding PPDU for calibration | 20.3.13.3 (Sounding PPDU for calibration) | HTM14.7:M | Yes  No  N/A  |
| HTP2.9 | Channel numbering and channelization |  |  |  |
| HTP2.9.1 | Channel allocation for 20 MHz channels at 5 GHz | 18.3.8.4 (Operating channel frequencies) | CF16:M | Yes  No  N/A  |
| HTP2.9.2 | Channel allocation for 20 MHz channels at 2.4 GHz | 19.4.3 (Operating channel frequencies) | CF16:M | Yes  No  N/A  |
| HTP2.9.3 | Channel allocation for 40 MHz channels at 5 GHz | 20.3.15.3 (Channel allocation in the 5 GHz band) | HTP2.3.4:M | Yes  No  N/A  |
| HTP2.9.4 | Channel allocation for 40 MHz channels at 2.4 GHz | 20.3.15.2 (Channel allocation in the 2.4 GHz Band) | HTP2.3.4:M | Yes  No  N/A  |
| HTP2.10 | PHY(#61) transmit specification |  |  |  |
| HTP2.10.1 | PHY(#61) transmit specification for 20 MHz channel | 20.3.19 (PHY transmit specification) | CF16:M | Yes  No  N/A  |
| HTP2.10.2 | PHY(#61) transmit specification for 40 MHz channel | 20.3.19 (PHY transmit specification) | HTP2.3.4:M | Yes  No  N/A  |
| \*HTP2.11 | Space-time block coding (STBC) | 20.3.11.9.2 (Space-time block coding (STBC)) | CF16:O | Yes  No  N/A  |
| HTP2.12 | PHY(#61) receive specification |  |  |  |
| HTP2.12.1 | PHY(#61) receive specification for 20 MHz channel | 20.3.20 (HT PHY receiver specification) | CF16:M | Yes  No  N/A  |
| HTP2.12.2 | PHY(#61) receive specification for 40 MHz channel | 20.3.20 (HT PHY receiver specification) | HTP2.3.4:M | Yes  No  N/A  |
| HTP2.13 | PPDU reception with RIFS | 20.3.20.7 (Reduced interframe space (RIFS)) | CF16:M | Yes  No  N/A  |

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| * **Tunneled direct-link setup extensions** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
| TDLS1 | Tunneled direct-link setup | 8.6.13 (TDLS Action field formats), 10.23 (Tunneled direct-link setup) | CF2&CF18:M | Yes  No  N/A  |
| TDLS1.1 | TDLS setup | 8.4.2.61 (Link Identifier element), 8.6.13.2 (TDLS Setup Request Action field format), 8.6.13.3 (TDLS Setup Response Action field format), 8.6.13.4 (TDLS Setup Confirm Action field format),  10.23.4 (TDLS direct-link establishment) | CF2&CF18:M | Yes  No  N/A  |
| TDLS1.2 | TDLS teardown | 8.4.2.61 (Link Identifier element), 8.6.13.5 (TDLS Teardown Action field format),  10.23.5 (TDLS direct-link teardown) | CF2&CF18:M | Yes  No  N/A  |
| TDLS1.3 | TDLS Peer Key Handshake | 11.6.9 (TDLS Peer Key security protocol) | CF2&CF18:M | Yes  No  N/A  |
| TDLS1.4 | TDLS Peer PSM | 8.4.2.61 (Link Identifier element), 8.4.2.62 (Wakeup Schedule element),  8.6.13.9 (TDLS Peer PSM Request Action field format), 8.6.13.10 (TDLS Peer PSM Response Action field format),  10.2.2.14 (TDLS Peer Power Save Mode) | CF2&CF18:O | Yes  No  N/A  |
| TDLS 1.5 | TDLS Peer U-APSD | 8.4.2.61 (Link Identifier element), 8.4.2.64 (PTI Control element), 8.4.2.65 (TPU Buffer Status element),  8.6.13.6 (TDLS Peer Traffic Indication Action field format), 8.6.13.11 (TDLS Peer Traffic Response Action field format),  10.2.2.15 (TDLS Peer U-APSD) | CF2&CF18:O | Yes  No  N/A  |
| TDLS 1.6 | TDLS Channel Switching | 8.4.2.61 (Link Identifier element), 8.4.2.63 (Channel Switch Timing element),  8.6.13.7 (TDLS Channel Switch Request Action field format), 8.6.13.8 (TDLS Channel Switch Response Action field format),  10.23.6 (TDLS channel switching) | CF2&CF8& CF11&CF18:O | Yes  No  N/A  |
| TDLS1.7 | TDLS Discovery | 8.4.2.61 (Link Identifier element),  8.6.13.12 (TDLS Discovery Request Action field format), 8.6.8.16 (TDLS Discovery Response frame format),  10.23.3 (TDLS Discovery) | CF2&CF8& CF11&CF18:O | Yes  No  N/A  |

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| * **WNM extensions** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
| WNM1 | Extended Capabilities element (Ed) | 8.4.2.26 (Extended Capabilities element) | CF19:M | Yes □ No □ N/A □ |
| WNM2 | STA Statistics (Triggered) and Multicast Diagnostics | 10.11.8 (Triggered autonomous reporting) | CF19:M | Yes □ No □ N/A □ |
| WNM2.1 | Protocol for Triggered Measurements | 10.11.8 (Triggered autonomous reporting) | CF19:M | Yes □ No □ N/A □ |
| WNM2.2 | Triggered STA Statistics | 8.4.2.20.9 (STA Statistics request), 8.4.2.21.9 (STA Statistics report), 8.6.7.2 (Radio Measurement Request frame format),8.6.7.3 (Radio Measurement Report frame format), 10.11.9.5 (STA Statistics report) | CF19:O | Yes □ No □ N/A □ |
| WNM2.3 | Multicast Diagnostics | 8.4.2.20.13 (Multicast Diagnostics request), 8.4.2.21.12 (Multicast Diagnostics report), 8.6.7.2 (Radio Measurement Request frame format),8.6.7.3 (Radio Measurement Report frame format), 10.11.19 (Multicast diagnostic reporting) | CF19:M | Yes □ No □ N/A □ |
| WNM3 | Event | 10.24.2 (Event request and report procedures) | CF19:M | Yes □ No □ N/A □ |
| WNM3.1 | Event Request frame | 8.4.2.66 (Event Request element), 8.6.14.2 (Event Request frame format) | (CF19 & CF1):M | Yes □ No □ N/A □ |
| WNM3.2 | Event Report frame | 8.4.2.67 (Event Report element), 8.6.14.3 (Event Report frame format) | (CF19 & CF2):M | Yes □ No □ N/A □ |
| WNM4 | Diagnostic | 10.24.3 (Diagnostic request and report procedures) | CF19:M | Yes □ No □ N/A □ |
| WNM4.1 | Diagnostic Request frame | 8.4.2.68 (Diagnostic Request element), 8.6.14.4 (Diagnostic Request frame format) | (CF19 & CF1):M | Yes □ No □ N/A □ |
| WNM4.2 | Diagnostic Report frame | 8.4.2.69 (Diagnostic Report element), 8.6.14.5 (Diagnostic Report frame format) | (CF19 & CF2):M | Yes □ No □ N/A □ |
| WNM4.3 | Configuration Profile Diagnostic Type | 8.4.2.69.3 (Configuration Profile report), 10.24.3.2 (Configuration Profile report) | CF19:M | Yes □ No □ N/A □ |
| WNM4.4 | Manufacturer Information STA Report Diagnostic Type | 8.4.2.69.2 (Manufacturer Information STA Report), 10.24.3.3 (Manufacturer information STA report) | CF19:M | Yes □ No □ N/A □ |
| WNM4.5 | Association Diagnostic Type | 8.4.2.68.2 (Association Diagnostic request), 8.4.2.69.4 (Association Diagnostic report), 10.24.3.4 (Association diagnostic) | CF19:M | Yes □ No □ N/A □ |
| WNM4.6 | IEEE Std(#130) 802.1X Authentication Diagnostic Type | 8.4.2.68.3 (IEEE Std 802.1X Authentication Diagnostic request),  8.4.2.69.5 (IEEE Std 802.1X Authentication Diagnostic report), 10.24.3.5 (IEEE Std 802.1X authentication diagnostic) | (CF19 & PC34):M | Yes □ No □ N/A □ |
| WNM5 | Location | 10.24.4 (Location track procedures), 8.4.2.70 (Location Parameters element) | CF19:M | Yes □ No □ N/A □ |
| WNM5.1 | Location Civic request/report(#1294) | 10.11.9.9 (Location Civic report) | CF19:M | Yes □ No □ N/A □ |
| WNM5.2 | Location Identifier request/report(#1294) | 10.11.9.10 (Location Identifier report) | CF19:M | Yes □ No □ N/A □ |
| WNM5.3 | Location Track Notification | 10.24.4 (Location track procedures), 8.6.8.17 (Location Track Notification frame format) | CF19:O | Yes □ No □ N/A □ |
| WNM5.3.1 | Time of Departure Notifications | 10.24.4 (Location track procedures), 8.4.2.70 (Location Parameters element) | CF19:O | Yes □ No □ N/A □ |
| WNM5.3.2 | Motion Detection Notifications | 10.24.4 (Location track procedures), 8.4.2.70 (Location Parameters element) | CF19:O | Yes □ No □ N/A □ |
| WNM5.4 | Location Configuration Request frame | 8.6.14.6 (Location Configuration Request frame format), 8.4.2.70 (Location Parameters element) | CF19:M | Yes □ No □ N/A □ |
| WNM5.4.1 | Normal Indication | 8.6.14.6 (Location Configuration Request frame format), 8.4.2.70 (Location Parameters element) | CF19:O | Yes □ No □ N/A □ |
| WNM5.4.2 | Motion Indication | 8.6.14.6 (Location Configuration Request frame format), 8.4.2.70 (Location Parameters element) | CF19:O | Yes □ No □ N/A □ |
| WNM5.5 | Location Configuration Response frame | 8.6.14.7 (Location Configuration Response frame format), 8.4.2.70 (Location Parameters element) | CF19:M | Yes □ No □ N/A □ |
| \*WNM6 | Multiple BSSID Support | 10.1.3.8 (Multiple BSSID procedure), 10.1.4 (Acquiring synchronization, scanning), 10.11.14 (Multiple BSSID Set) | CF19:O | Yes □ No □ N/A □ |
| WNM6.1 | Multiple BSSID element | 8.4.2.45 (Multiple BSSID element) | WNM6:M | Yes □ No □ N/A □ |
| WNM6.2 | Multiple BSSID-index element | 8.4.2.73 (Multiple BSSID-Index element) | WNM6:M | Yes □ No □ N/A □ |
| WNM7 | BSS (#1202)transition (Ed)management | 10.24.7 (BSS transition management for network load balancing) | CF19:O | Yes □ No □ N/A □ |
| WNM7.1 | Neighbor Report element | 8.4.2.36 (Neighbor Report element) | (CF19 & CF1):M | Yes □ No □ N/A □ |
| WNM7.2 | BSS Transition Management Query frame | 8.6.14.8 (BSS Transition Management Query frame format) | (CF19 & CF1):M | Yes □ No □ N/A □ |
| WNM7.3 | BSS Transition Management Request frame | 8.6.14.9 (BSS Transition Management Request frame format) | (CF19 & CF2):M | Yes □ No □ N/A □ |
| WNM7.4 | BSS Transition Management Response frame | 8.6.14.10 (BSS Transition Management Response frame format) | (CF19 & CF2):M | Yes □ No □ N/A □ |
| \*WNM8 | FMS | 10.2.2.16 (FMS power management) | CF19:O | Yes □ No □ N/A □ |
| WNM8.1 | FMS Request frame | 8.6.14.11 (FMS Request frame format) | (CF2 & WNM8):M | Yes □ No □ N/A □ |
| WNM8.2 | FMS Response frame | 8.6.14.12 (FMS Response frame format) | (CF1 & WNM8):M | Yes □ No □ N/A □ |
| WNM9 | Proxy ARP | 10.24.14 (Proxy ARP (including Proxy Neighbor Discovery) service) | CF19:O | Yes □ No □ N/A □ |
| \*WNM10 | Collocated Interference Reporting | 10.24.10 (QoS Traffic capability procedure) | CF19:O | Yes □ No □ N/A □ |
| WNM10.1 | Collocated Interference Request frame | 8.6.14.13 (Collocated Interference Request frame format) | WNM10:M | Yes □ No □ N/A □ |
| WNM10.2 | Collocated Interference Report frame | 8.6.14.14 (Collocated Interference Report frame format) | WNM10:M | Yes □ No □ N/A □ |
| \*WNM11 | BSS (#1177)max idle period | 10.24.13 (BSS max idle period management) | CF19:M | Yes □ No □ N/A □ |
| WNM11.1 | BSS Max Idle Period element | 8.4.2.78 (BSS Max Idle Period element) | WNM11:M | Yes □ No □ N/A □ |
| \*WNM12 | TFS | 10.24.12 (TFS procedures) | CF19:O | Yes □ No □ N/A □ |
| WNM12.1 | TFS Request frame | 8.4.2.79 (TFS Request element), 8.6.14.15 (TFS Request frame format) | WNM12:M | Yes □ No □ N/A □ |
| WNM12.2 | TFS Response frame | 8.4.2.80 (TFS Response element), 8.6.14.16 (TFS Response frame format) | WNM12:M | Yes □ No □ N/A □ |
| WNM12.3 | TFS Notify frame | 8.6.14.17 (TFS Notify frame format) | (CF1 & WNM12):M, (CF2 & WNM12):O | Yes □ No □ N/A □ |
| \*WNM13 | WNM-Sleep Mode | 10.2.2.18 (WNM-Sleep mode) | WNM12:O | Yes □ No □ N/A □ |
| WNM13.1 | WNM-Sleep Mode Request frame | 8.4.2.81 (WNM-Sleep Mode element), 8.6.14.19 (WNM-Sleep Mode Request frame format) | WNM13:M | Yes □ No □ N/A □ |
| WNM13.2 | WNM-Sleep Mode Response frame | 8.4.2.81 (WNM-Sleep Mode element), 8.6.14.20 (WNM-Sleep Mode Response frame format) | WNM13:M | Yes □ No □ N/A □ |
| \*WNM14 | TIM Broadcast | 10.2.2.17 (TIM Broadcast) | CF19:O | Yes □ No □ N/A □ |
| WNM14.1 | TIM Broadcast Request frame | 8.4.2.82 (TIM Broadcast Request element), 8.6.14.21 (TIM Broadcast Request frame format), | WNM14:M | Yes □ No □ N/A □ |
| WNM14.2 | TIM Broadcast Response frame | 8.4.2.83 (TIM Broadcast Response element), 8.6.14.22 (TIM Broadcast Response frame format) | WNM14:M | Yes □ No □ N/A □ |
| WNM14.3 | TIM Broadcast frame | 8.6.15.2 (TIM frame format) | WNM14:M | Yes □ No □ N/A □ |
| \*WNM15 | QoS Traffic Capability | 10.24.10 (QoS Traffic capability procedure) | (CF19 & CF2):O | Yes □ No □ N/A □ |
| WNM15.1 | QoS Traffic Capability element | 8.4.2.77 (QoS Traffic Capability element) | WNM15:M | Yes □ No □ N/A □ |
| WNM15.2 | QoS Traffic Capability update frame | 8.6.14.23 (QoS Traffic Capability Update frame format) | WNM15:M | Yes □ No □ N/A □ |
| WNM16 | AC Station Count | 10.24.11 (AC Station Count) | (CF19 & CF2):O | Yes □ No □ N/A □ |
| WNM17 | Timing Measurement | 10.24.5 (Timing measurement procedure) | CF19:O | Yes □ No □ N/A □ |
| WNM17.1 | Timing Measurement Request | 8.6.14.28 (Timing Measurement Request frame format) | WNM17:M | Yes □ No □ N/A □ |
| WNM17.2 | Timing Measurement | 8.6.15.3 (Timing Measurement frame format) | WNM17:M | Yes □ No □ N/A □ |
| \*WNM18 | Channel Usage | 10.24.15 (Channel usage procedures) | CF19:O | Yes □ No □ N/A □ |
| WNM18.1 | Channel Usage Request frame | 8.4.2.85 (Channel Usage element), 8.6.14.24 (Channel Usage Request frame format) | WNM18:M | Yes □ No □ N/A □ |
| WNM18.2 | Channel Usage Response frame | 8.4.2.85 (Channel Usage element), 8.6.14.25 (Channel Usage Response frame format) | WNM18:M | Yes □ No □ N/A □ |
| \*WNM19 | DMS | 10.24.16 (Group addressed transmission service) | (CF19 & CF16):O | Yes □ No □ N/A □ |
| WNM19.1 | DMS Request frame | 8.4.2.87 (DMS Request element), 8.6.14.26 (DMS Request frame format) | WNM19:M | Yes □ No □ N/A □ |
| WNM19.2 | DMS Response frame | 8.4.2.88 (DMS Response element), 8.6.14.27 (DMS Response frame format) | WNM19:M | Yes □ No □ N/A □ |
| WNM20 | UTC TSF Offset | 10.22.3 (UTC TSF Offset procedures), 8.4.2.60 (Time Advertisement element), 8.4.2.86 (Time Zone element) | CF19:O | Yes □ No □ N/A □ |
| WNM21 | U-APSD Coexistence | 8.4.2.90 (U-APSD Coexistence element), 10.2.2.5.2 (U-APSD Coexistence) | CF19:O | Yes □ No □ N/A □ |
| WNM22 | WNM-Notification | 10.24.17 (WNM-Notification) | (CF19 & CF16):O | Yes □ No □ N/A □ |
| WNM22.1 | WNM-Notification Request frame | 8.6.14.29 (WNM-Notification Request frame format) | WNM21:M | Yes □ No □ N/A □ |
| WNM22.2 | WNM-Notification Response frame | 8.6.14.30 (WNM-Notification Response frame format) | WNM21:M | Yes □ No □ N/A □ |
| WNM23 (#46) | Fine Timing Measurement | 10.24.6 (Fine timing measurement procedure) | CF19:O | Yes □ No □ N/A □ |
| WNM23.1 | Fine Timing Measurement Request | 8.6.8.25 (Fine Timing Measurement Request frame format) | WNM23:M | Yes □ No □ N/A □ |
| WNM23.2 | Fine Timing Measurement | 8.6.8.26 (Fine Timing Measurement frame format) | WNM23:M | Yes □ No □ N/A □ |

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| * **Interworking (IW) with external networks extensions** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
|  | Are the following Interworking with External Networks capabilities supported? |  |  |  |
| IW1 | Interworking capabilities and Information | 8.4.2.91 (Interworking element), 10.25.2 (Interworking capabilities and information) | CF20:M | Yes  No  N/A  |
| IW1.1 | Interworking element | 8.4.2.91 (Interworking element) | IW1:M | Yes  No  N/A  |
| IW1.2 | Access network type | 8.4.2.91 (Interworking element) | IW1:M | Yes  No  N/A  |
| IW1.3 | Venue type | 8.4.2.91 (Interworking element) | IW1:M | Yes  No  N/A  |
| IW1.4 | HESSID | 8.4.2.91 (Interworking element) | IW1:M | Yes  No  N/A  |
| IW2 | Generic Advertisement Service | 10.25.3 (Interworking procedures: generic advertisement service (GAS)) | CF20:M | Yes  No  N/A  |
| IW2.1 | Advertisement Protocol element | 8.4.2.92 (Advertisement Protocol element) | IW2:M | Yes  No  N/A  |
| \*IW2.2 | GAS Protocol | 10.25.3.1 (GAS Protocol) | IW2:M | Yes  No  N/A  |
| \*IW2.2.1 | GAS frames | 8.6.8 (Public Action details) | IW2:M | Yes  No  N/A  |
| IW2.2.2 | Access network query protocol(#1185) | 8.4.4 (Access network query protocol (ANQP) elements) | IW2.2:M | Yes  No  N/A  |
| IW2.2.3 | Query List | 8.4.4.2 (Query List ANQP-element) | IW2.2.1:M | Yes  No  N/A  |
| IW2.2.4 | Capability List | 8.4.4.3 (Capability List ANQP-element) | IW2.2.1:M | Yes  No  N/A  |
| IW2.2.5 | Venue Name | 8.4.4.4 (Venue Name ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.6 | Emergency Call Number | 8.4.4.5 (Emergency Call Number ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.7 | Network Authentication Type | 8.4.4.6 (Network Authentication Type ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.8 | Roaming Consortium | 8.4.4.7 (Roaming Consortium ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.9 | IP Address Type Availability | 8.4.4.9 (IP Address Type Availability ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.10 | NAI Realm | 8.4.4.10 (NAI Realm ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.11 | 3GPP Cellular Network | 8.4.4.11 (3GPP Cellular Network ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.12 | AP Geospatial Location | 8.4.4.12 (AP Geospatial Location ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.13 | AP Civic Location | 8.4.4.13 (AP Civic Location ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.14 | AP Location Public Identifier URI | 8.4.4.14 (AP Location Public Identifier URI ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.15 | Domain Name | 8.4.4.15 (Domain Name ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.16 | Emergency Alert URI | 8.4.4.16 (Emergency Alert URI ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.17 | Emergency NAI | 8.4.4.17 (Emergency NAI ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.18 | Vendor Specific | 8.4.4.8 (Vendor Specific ANQP-element) | IW2.2.1:O | Yes  No  N/A  |
| IW2.2.19 | MIH IS | 8.4.2.92 (Advertisement Protocol element), 10.25.4 (Interworking procedures: IEEE Std 802.21 MIH support) | IW2:O | Yes  No  N/A  |
| IW2.2.20 | MIH Event and Command Services Discovery | 8.4.2.92 (Advertisement Protocol element), 10.25.4 (Interworking procedures: IEEE Std 802.21 MIH support) | IW2.2:O | Yes  No  N/A  |
| IW2.2.21 | Emergency Alert System (EAS) | 8.4.2.92 (Advertisement Protocol element), 8.4.2.96 (Emergency Alert Identifier element) | IW2.2:O | Yes  No  N/A  |
| IW2.2.22 | Advertisement Protocol ID, Vendor Specific | 8.4.2.92 (Advertisement Protocol element) | IW2.2:O | Yes  No  N/A  |
| IW2.2.23 | TDLS Capability | 8.4.4.18 (TDLS Capability ANQP-element) | IW2.21:O | Yes  No  N/A  |
| IW2.2.24 | Neighbor Report | 8.4.4.19 (Neighbor Report ANQP-element) | IW2.21:O | Yes  No  N/A  |
| IW2.3 | GAS Initial Request frame | 8.6.8.12 (GAS Initial Request frame format) | IW2:M | Yes  No  N/A  |
| IW2.4 | GAS Initial Response frame | 8.6.8.13 (GAS Initial Response frame format) | IW2:M | Yes  No  N/A  |
| IW2.5 | GAS Comeback Request frame | 8.6.8.14 (GAS Comeback Request frame format) | IW2:M | Yes  No  N/A  |
| IW2.6 | GAS Comeback Response frame | 8.6.8.15 (GAS Comeback Response frame format) | IW2:M | Yes  No  N/A  |
| IW3 | QoS Mapping from External Networks | 10.25.9 (Interworking procedures: support for QoS mapping from external networks), 9.20.4.2 (Contention-based admission control procedures), 9.20.4.3 (Controlled-access admission control) | CF20:O | Yes  No  N/A  |
| IW3.1 | QoS Map Set element | 8.4.2.94 (QoS Map Set element) | IW3:M | Yes  No  N/A  |
| IW3.2 | Transport of QoS Map Set | 10.25.9 (Interworking procedures: support for QoS mapping from external networks) | IW3:M | Yes  No  N/A  |
| IW3.3 | QoS Map Configure | 8.6.3.6 (QoS Map Configure frame format) | IW3:M | Yes  No  N/A  |
| IW4 | MIH Support | 6.4 (MAC state generic convergence function (MSGCF)), 10.25.4 (Interworking procedures: IEEE Std 802.21 MIH support) | CF20:O | Yes  No  N/A  |
| IW4.1 | MAC State Generic Convergence Function Support | 6.4 (MAC state generic convergence function (MSGCF)) | IW4:M | Yes  No  N/A  |
| IW4.2 | Informational events | 6.4.5 (Convergence function informational events) | IW4:M | Yes  No  N/A  |
| IW4.3 | ESS status reporting | 6.4.7 (ESS status reporting) | IW4:M | Yes  No  N/A  |
| IW4.4 | Network configuration | 6.4.8 (Network configuration) | IW4:M | Yes  No  N/A  |
| IW4.5 | Network events | 6.4.9 (Network events) | IW4:M | Yes  No  N/A  |
| IW4.6 | Network command interface | 6.4.10 (Network command interface) | IW4:M | Yes  No  N/A  |
| IW4.7 | Mobility management | 6.4.11 (MAC state SME SAP—mobility management) | IW4:M | Yes  No  N/A  |
| IW4.8 | Network configuration | 6.4.8 (Network configuration) | IW4:M | Yes  No  N/A  |
| IW5 | Extended channel switch enabled | 8.4.2.57 (20/40 BSS Intolerant Channel Report element), 10.1.4 (Acquiring synchronization, scanning) | (CF15 AND DSE9):M | Yes  No  N/A  |
| IW6 | Expedited Bandwidth Request | 8.4.2.93 (Expedited Bandwidth Request element) | CF20:O | Yes  No  N/A  |
| IW7 | SSPN Interface | 10.25.5 (Interworking procedures: interactions with SSPN) | CF20:O | Yes  No  N/A  |

* **Mesh protocol capabilities**

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| * **General mesh support** | | | | |
| **Item** | **Protocol capability** | **Reference** | **Status** | **Support** |
| \*MP1 | Support of mesh capability | 4.3.16 (Mesh BSS: IEEE Std 802.11 wireless mesh network), 13.1 (Mesh STA dependencies) | CF21:M | Yes  No  N/A  |
| MP1.1 | Mesh BSS scanning | 13.2.2 (Mesh identifier), 13.2.6 (Scanning mesh BSSs) | MP1:M | Yes  No  N/A  |
| MP1.2 | Candidate peer mesh STA determination | 13.2.7 (Candidate peer mesh STA) | MP1:M | Yes  No  N/A  |
| MP1.3 | Active mesh profile  determination | 13.2.3 (Mesh profile), 13.2.4 (Mesh STA configuration) | MP1:M | Yes  No  N/A  |
| MP1.4 | Establishing a mesh BSS | 13.2.8 (Establishing or becoming a member of a mesh BSS) | MP1:M | Yes  No  N/A  |
| MP1.5 | Becoming a member of a mesh BSS | 13.2.8 (Establishing or becoming a member of a mesh BSS) | MP1:M | Yes  No  N/A  |
| MP1.6 | Announcement of mesh  profile and supplemental information for the mesh  discovery | 13.2.3 (Mesh profile), 13.2.5 (Supplemental information for the mesh discovery) | MP1:M | Yes  No  N/A  |
| \*MP2 | Mesh peering management (MPM) framework | 13.3 (Mesh peering management (MPM)) | CF21:M | Yes  No  N/A  |
| \*MP2.1 | Mesh peering management (MPM) protocol | 13.3 (Mesh peering management (MPM)) | MP2:M | Yes  No  N/A  |
| MP2.1.1 | Processing of Mesh Peering Open frame | 13.3.6 (Mesh peering open) | MP2.1:M | Yes  No  N/A  |
| MP2.1.2 | Processing of Mesh Peering Confirm frame | 13.3.7 (Mesh peering confirm) | MP2.1:M | Yes  No  N/A  |
| MP2.1.3 | Processing of Mesh Peering Close frame | 13.3.8 (Mesh peering close) | MP2.1:M | Yes  No  N/A  |
| MP2.1.4 | MPM finite state machine | 13.4 (Mesh peering management finite state machine (MPM FSM)) | MP2.1:M | Yes  No  N/A  |
| \*MP2.2 | Authenticated mesh peering exchange (AMPE) | 13.5 (Authenticated mesh peering exchange (AMPE)) | MP2:O | Yes  No  N/A  |
| MP2.2.1 | Mesh authentication using SAE | 13.3.3 (Mesh authentication), 11.3 (Authentication using a password) | MP2.2:M | Yes  No  N/A  |
| MP2.2.2 | Mesh authentication using IEEE Std(#130) 802.1X | 13.3.3 (Mesh authentication), 4.10 (IEEE Std 802.11 and IEEE Std 802.1X-2010) | MP2.2:O | Yes  No  N/A  |
| MP2.2.3 | Protected Mesh Peering Management frame processing | 13.5.3 (Construction and processing AES-SIV-protected Mesh Peering Management frames), 13.5.5 (Mesh Peering Management frames for AMPE) | MP2.2:M | Yes  No  N/A  |
| MP2.2.4 | AMPE finite state machine | 13.5.6 (AMPE finite state machine) | MP2.2:M | Yes  No  N/A  |
| MP2.2.5 | MGTK distribution | 13.5.4 (Distribution of group transient keys in an MBSS) | MP2.2:M | Yes  No  N/A  |
| MP2.2.6 | MGTK update | 13.6 (Mesh group key handshake) | MP2.2:O | Yes  No  N/A  |
| MP3 | Mesh STA beaconing | 13.13.3 (Beaconing) | CF21:M | Yes  No  N/A  |
| \*MP4 | Mesh STA synchronization | 13.13.2 (Extensible synchronization framework) | CF21:M | Yes  No  N/A  |
| \*MP4.1 | Neighbor offset synchronization method | 13.13.2 (Extensible synchronization framework) | MP4:M | Yes  No  N/A  |
| MP4.1.1 | Calculation of TSF offset | 13.13.2.2.2 (Timing offset calculation) | MP4.1:M | Yes  No  N/A  |
| MP4.1.2 | Clock drift adjustment | 13.13.2.2.3 (Clock drift adjustment) | MP4.1:M | Yes  No  N/A  |
| \*MP4.2 | Mesh beacon collision  avoidance (MBCA) | 13.13.4 (Mesh beacon collision avoidance (MBCA)) | MP4:O | Yes  No  N/A  |
| MP4.2.1 | Beacon timing advertisement | 13.13.4.2 (Beacon timing advertisement) | MP4.2:M | Yes  No  N/A  |
| MP4.2.2 | TBTT selection | 13.13.4.3 (TBTT selection) | MP4.2:M | Yes  No  N/A  |
| MP4.2.3 | TBTT adjustment | 13.13.4.4 (TBTT adjustment) | MP4.2:M | Yes  No  N/A  |
| MP4.2.4 | Frame transmission across reported TBTT | 13.13.4.5 (Frame transmission across reported TBTT) | MP4.2:O | Yes  No  N/A  |
| MP4.2.5 | Delayed beacon transmission | 13.13.4.6 (Delayed beacon transmissions) | MP4.2:O | Yes  No  N/A  |
| \*MP5 | MCCA | 9.21.3 (MCF controlled channel access (MCCA)) | CF21:O | Yes  No  N/A  |
| MP5.1 | MCCAOP Advertisement | 9.21.3.7 (MCCAOP advertisement) | MP5:M | Yes  No  N/A  |
| MP5.2 | Neighbor MCCAOP  Recognition | 9.21.3.4 (Neighborhood MCCAOP periods at a mesh STA)–9.21.3.5 (MCCA access fraction (MAF)) | MP5:M | Yes  No  N/A  |
| MP5.3 | MCCAOP Setup | 9.21.3.6 (MCCAOP setup procedure) | MP5:M | Yes  No  N/A  |
| MP5.4 | Access during MCCAOPs | 9.21.3.9 (Access during MCCAOPs) | MP5:M | Yes  No  N/A  |
| MP5.5 | MCCAOP teardown | 9.21.3.8 (MCCAOP teardown) | MP5:M | Yes  No  N/A  |
| \*MP6 | Intra mesh congestion control | 13.12 (Intra-mesh congestion control) | CF21:O | Yes  No  N/A  |
| MP6.1 | Local congestion monitoring and detection | 13.12 (Intra-mesh congestion control) | MP6:M | Yes  No  N/A  |
| MP6.2 | Congestion control signaling | 13.12 (Intra-mesh congestion control) | MP6:M | Yes  No  N/A  |
| MP6.3 | Local rate control | 13.12 (Intra-mesh congestion control) | MP6:M | Yes  No  N/A  |
| \*MP7 | MBSS channel switch  procedure | 10.9.8 (Selecting and advertising a new channel), 10.10.3 (Selecting and advertising a new channel and/or operating class) | CF21:M | Yes  No  N/A  |
| MP7.1 | Transmission of channel switch advertisement | 10.9.8 (Selecting and advertising a new channel), 10.10.3 (Selecting and advertising a new channel and/or operating class) | MP7:M | Yes  No  N/A  |
| MP7.2 | Propagation of channel switch advertisement | 10.9.8 (Selecting and advertising a new channel), 10.10.3 (Selecting and advertising a new channel and/or operating class) | MP7:M | Yes  No  N/A  |
| \*MP8 | Mesh power save operation (operation in light or deep sleep mode) | 13.14 (Power save in a mesh BSS) | CF21:O | Yes  No  N/A  |
| MP8.1 | Link-specific mesh power mode setting | 13.14.2.2 (Peer-specific mesh power modes), 13.14.8 (Operation in peer-specific and nonpeer mesh power modes) | MP8:M | Yes  No  N/A  |
| MP8.2 | Nonpeer mesh power mode setting | 13.14.2.3 (Nonpeer mesh power modes) | MP8:M | Yes  No  N/A  |
| MP8.3 | Light sleep mode operation | 13.14.8.4 (Operation in light sleep mode for a mesh peering) | MP8:M | Yes  No  N/A  |
| MP8.4 | Deep sleep mode operation | 13.14.8.5 (Operation in deep sleep mode for a mesh peering) | MP8:M | Yes  No  N/A  |
| MP8.5 | STA power state transitions | 13.14.3 (Mesh power mode indications and transitions) | MP8:M | Yes  No  N/A  |
| MP8.6 | Mesh awake window  operation | 13.14.6 (Mesh awake window) | MP8:M | Yes  No  N/A  |
| \*MP9 | Mesh power save support | 13.14 (Power save in a mesh BSS) | CF21:M | Yes  No  N/A  |
| MP9.1 | TIM transmission | 13.14.4 (TIM transmissions in an MBSS) | MP9:M | Yes  No  N/A  |
| MP9.2 | Link-specific mesh power modes determination | 13.14.2 (Mesh power modes) | MP9:M | Yes  No  N/A  |
| MP9.3 | Group addressed frame  transmission | 13.14.7 (Power save support) | MP9:M | Yes  No  N/A  |
| MP9.4 | Frame transmission to a mesh STA in light sleep mode | 13.14.7 (Power save support), 13.14.9 (Mesh peer service periods) | MP9:M | Yes  No  N/A  |
| MP9.5 | Frame transmission to a mesh STA in deep sleep mode | 13.14.7 (Power save support), 13.14.9 (Mesh peer service periods) | MP9:M | Yes  No  N/A  |
| MP10 | Airtime link metric  computation | 13.9 (Airtime link metric) | CF21:M | Yes  No  N/A  |
| \*MP11 | Link metric reporting | 13.8.3 (Link metric reporting) | CF21:M | Yes  No  N/A  |
| MP11.1 | Autonomous link metric reporting | 13.8.3 (Link metric reporting) | MP11:O | Yes  No  N/A  |
| MP11.2 | Link metric reporting upon request | 13.8.3 (Link metric reporting) | MP11:M | Yes  No  N/A  |
| \*MP12 | Proxy operation | 13.11.4 (Proxy information and proxy update) | CF21:O | Yes  No  N/A  |
| MP12.1 | Data forwarding at proxy mesh gate | 13.11.3 (Data forwarding at proxy mesh gates) | MP12:M | Yes  No  N/A  |
| MP12.2 | Maintenance of proxy  information | 13.11.4.2 (Proxy information) | CF21:M | Yes  No  N/A  |
| MP12.3 | Proxy update using Proxy Update and Proxy Update Confirmation frames | 13.11.4 (Proxy information and proxy update) | CF21:M | Yes  No  N/A  |
| MP12.4 | Proxy update using HWMP Mesh Path Selection frames | 13.10.9 (Path request (PREQ) mechanism), 13.10.10 (Path reply (PREP) mechanism), 13.10.11 (Path error (PERR) mechanism) | HWM1:M | Yes  No  N/A  |
| \*MP13 | Gate announcement | 13.11.2 (Gate announcement (GANN)) | CF21:O | Yes  No  N/A  |
| MP13.1 | GANN transmission | 13.11.2 (Gate announcement (GANN)) | MP13:O | Yes  No  N/A  |
| MP13.2 | GANN reception and  propagation | 13.11.2 (Gate announcement (GANN)) | CF21:M | Yes  No  N/A  |
| \*MP14 | Mesh Control field handling | 8.2.4.7.3 (Mesh Control field) | CF21:M | Yes  No  N/A  |
| MP14.1 | Address Extension  recognition | 8.2.4.7.3 (Mesh Control field), 9.33.3 (Frame addressing in an MBSS) | MP14:M | Yes  No  N/A  |
| MP14.2 | Mesh TTL handling | 8.2.4.7.3 (Mesh Control field), 9.33.4 (Addressing and forwarding of individually addressed Mesh Data frames), 9.33.5 (Addressing and forwarding of group addressed Mesh Data frames), 9.33.6 (Addressing of Management frames and MMPDU forwarding) | MP14:M | Yes  No  N/A  |
| MP14.3 | Mesh Sequence Number  handling | 8.2.4.7.3 (Mesh Control field), 9.33.4 (Addressing and forwarding of individually addressed Mesh Data frames), 9.33.5 (Addressing and forwarding of group addressed Mesh Data frames), 9.33.6 (Addressing of Management frames and MMPDU forwarding), 9.33.7 (Detection of duplicate MSDUs/MMPDUs) | MP14:M | Yes  No  N/A  |
| \*MP15 | MSDU/MMPDU forwarding | 9.33 (Mesh forwarding framework) | CF21:O | Yes  No  N/A  |
| MP15.1 | Individually addressed MSDU forwarding | 9.33.4 (Addressing and forwarding of individually addressed Mesh Data frames) | MP15:M | Yes  No  N/A  |
| MP15.2 | Group addressed MSDU  forwarding | 9.33.5 (Addressing and forwarding of group addressed Mesh Data frames) | MP15:M | Yes  No  N/A  |
| MP15.3 | MMPDU forwarding | 9.33.6 (Addressing of Management frames and MMPDU forwarding) | MP15:M | Yes  No  N/A  |
| MP15.4 | Detection of duplicate MSDUs/MMPDUs | 9.33.7 (Detection of duplicate MSDUs/MMPDUs) | CF21:M | Yes  No  N/A  |
| MP15.5 | Treatment of unknown  destination | 9.33.9 (Frame forwarding and unknown destination) | CF21:M | Yes  No  N/A  |

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| * **HWMP path selection protocol capabilities** | | | | |
| **Item** | **Protocol capability** | **Reference** | **Status** | **Support** |
| \*HWM1 | Hybrid wireless mesh  protocol (HWMP) | 13.10 (Hybrid wireless mesh protocol (HWMP)) | CF21:M | Yes  No  N/A  |
| \*HWM1.1 | On-demand path selection | 13.10.3 (On-demand path selection mode) | HWM1:M | Yes  No  N/A  |
| HWM1.1.1 | PREQ processing for on-demand path selection | 13.10.9 (Path request (PREQ) mechanism) | HWM1.1:M | Yes  No  N/A  |
| HWM1.1.2 | PREP processing for on-demand path selection | 13.10.10 (Path reply (PREP) mechanism) | HWM1.1:M | Yes  No  N/A  |
| HWM1.1.3 | PERR processing for on-demand path selection | 13.10.11 (Path error (PERR) mechanism) | HWM1.1:M | Yes  No  N/A  |
| \*HWM1.2 | Proactive tree building | 13.10.4 (Proactive tree building mode) | HWM1:M | Yes  No  N/A  |
| HWM1.2.1 | PREQ processing for  proactive tree building | 13.10.9 (Path request (PREQ) mechanism) | HWM1.2:M | Yes  No  N/A  |
| HWM1.2.2 | PREP processing for  proactive tree building | 13.10.10 (Path reply (PREP) mechanism) | HWM1.2:M | Yes  No  N/A  |
| HWM1.2.3 | PERR processing for  proactive tree building | 13.10.11 (Path error (PERR) mechanism) | HWM1.2:M | Yes  No  N/A  |
| HWM1.2.4 | RANN processing | 13.10.12 (Root announcement (RANN) mechanism) | HWM1.2:M | Yes  No  N/A  |
| HWM2 | Maintenance of forwarding information | 9.33.2 (Forwarding information), 13.10.8.4 (Forwarding information) | MP15:M | Yes  No  N/A  |

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| * **QMF extensions (11ae)** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
| QMF1 | Extended Capabilities element | 8.4.2.26 (Extended Capabilities element) | CF22:M | Yes  No  N/A  |
| QMF2 | Channel access procedures for QMFs | 9.2.4.2 (HCF contention-based channel access (EDCA)) | CF22:M | Yes  No  N/A  |
| QMF3 | Duplicate detection and recovery for QMFs | 9.3.2.10 (Duplicate detection and recovery) | CF22:M | Yes  No  N/A  |
| QMF4 | QMF policy Configuration | 10.26.2 (QMF policy advertisement and configuration procedures) | CF22:M | Yes  No  N/A  |
| QMF5 | Interpreting QMF priority | 10.26.3 (Interpreting QMF access categories) | CF22:M | Yes  No  N/A  |
| QMF6 | CCMP cryptographic encapsulation for QMFs | 11.4.3.3 (CCMP cryptographic encapsulation) | (CF22 AND PC34.1.10):M | Yes  No  N/A  |

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| * **RobustAVT extensions (11aa)** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
| AVT1 | Extended Capabilities element | 8.4.2.26 (Extended Capabilities element) | CF23:M | Yes  No  N/A  |
| AVT2 | Groupcast with Retries (GCR) | 10.24.16.3.2 (GCR group membership procedures), 10.24.16.3.3 (GCR setup procedures)  , 10.24.16.3.4 (GCR frame exchange procedures)  , 10.24.16.3.5 (Concealment of GCR transmissions), 10.24.16.3.6 (GCR unsolicited retry) | (CF16 and CF23 and WNM19): M | Yes  No  N/A  |
| (CF1 and CF23 and WNM19 and HTM4.4):M | Yes  No  N/A  |
| AVT2.1 | Advanced GCR | 8.4.2.26 (Extended Capabilities element), 10.24.16.3.7 (GCR Block Ack), 10.24.16.3.8 (GCR-SP), 9.22.10 (GCR Block Ack) | (CF23 and QB5): O | Yes  No  N/A  |
| AVT3 | Alternate EDCA transmit queues | 9.2.4.2 (HCF contention-based channel access (EDCA)) | CF23 and CF16:O(#1054) | Yes  No  N/A  |
| AVT4  AVT4.1  AVT4.2  AVT4.3 | Stream Classification Service (SCS)  SCS Request frame  SCS Response frame  Drop eligibility indicator (DEI) | 10.27.2 (SCS procedures)  8.6.19.2 (SCS Request frame format)  8.6.19.3 (SCS Response frame format)  10.27.2 (SCS procedures) | CF23:O  AVT4:M  AVT4:M  (CF16 and AVT4):M | Yes  No  N/A   Yes  No  N/A   Yes  No  N/A   Yes  No  N/A  |
| ATV5 | Overlapping Basic Service Set (OBSS) Management | 10.28 (Procedures to manage OBSS), 8.4.2.26 (Extended Capabilities element) | (CF1 and (QP2 or QD6) and CF23):M | Yes  No  N/A  |
| ATV5.1 | AP Peer Key | 11.10 (AP PeerKey support) | AVT5:O | Yes  No  N/A  |
| ATV5.2  AVT5.2.1  AVT5.2.2  AVT5.2.3  AVT5.2.4 | QLoad Report  QLoad Report element  QLoad Request frame  QLoad Report frame  Protected QLoad Report | 10.28.2 (QLoad Report element)  8.4.2.122 (QLoad Report element)  8.6.8.20 (QLoad Request frame format)  8.6.8.21 (QLoad Report frame format)  8.6.8.21 (QLoad Report frame format) | AVT5:M  AVT5.2:M  AVT5.2:M  AVT5.2:M  (AVT5.2 and AVT5.1):O | Yes  No  N/A   Yes  No  N/A   Yes  No  N/A   Yes  No  N/A   Yes  No  N/A  |
| AVT5.3 | HCCA TXOP Update Count element | 8.4.2.123 (HCCA TXOP Update Count element) | (AVT5 and QP2):O | Yes  No  N/A  |
| AVT5.3.1 | HCCA TXOP Negotiation | 10.28.3 (HCCA TXOP negotiation) | AVT5.3:O | Yes  No  N/A  |
| AVT5.3.2 | Protected HCCA TXOP Negotiation | 10.28.3 (HCCA TXOP negotiation) | (AVT5.3 and ATV5.1):O | Yes  No  N/A  |
| AVT6 | GCR for Mesh | 8.4.2.26 (Extended Capabilities element), 9.22.10 (GCR Block Ack), 10.24.16.3.7 (GCR Block Ack), 10.24.16.3.6 (GCR unsolicited retry) | (WNM19 and HTM4.4 and CF16 and CF23 and CF21):O | Yes  No  N/A  |

* **DMG features**

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| * **DMG MAC features** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
|  | Are the following MAC protocol features supported? |  |  |  |
| DMG-M1 | DMG capabilities signaling |  |  |  |
| DMG-M1.1 | DMG Capabilities element | 8.4.2.127 (DMG Capabilities element) | CF25:M | Yes  No  N/A  |
| DMG-M1.2 | Signaling of STA capabilities in Probe Request, (Re)Association Request frames | 8.4.2.127 (DMG Capabilities element), 8.3.3.9, 8.3.3.5, 8.3.3.7 | (CF25 AND (CF2.1 OR CF2.2 OR CF2.4.2)):M | Yes  No  N/A  |
| DMG-M1.3 | Signaling of STA and BSS capabilities in DMG Beacon, Probe Response, (Re)Association Response frames | 8.4.2.127 (DMG Capabilities element), 8.3.4.1 (DMG Beacon), 8.3.3.10 (Probe Response frame format), 8.3.3.6 (Association Response frame format), 8.3.3.8 (Reassociation Response frame format) | (CF25 AND (CF1 OR CF2.4.1)):M | Yes  No  N/A  |
| DMG-M2 | Signaling of DMG operation | 8.4.2.128 (DMG Operation element ) | (CF25 AND (CF1 OR CF2.4.1)):M | Yes  No  N/A  |
| DMG-M3 | MSDU aggregation |  |  |  |
| DMG-M3.1 | Reception of Basic A-MSDUs | 8.2.4.5 (QoS Control field), 8.3.2.2.2 (Basic A-MSDU subframe format) | CF25:M | Yes  No  N/A  |
| DMG-M3.2 | Basic A-MSDU format | 8.3.2.2.2 (Basic A-MSDU subframe format) | CF25:M | Yes  No  N/A  |
| DMG-M3.3 | Basic A-MSDU content | 8.3.2.2.2 (Basic A-MSDU subframe format) | CF25:M | Yes  No  N/A  |
| DMG-M3.4 | Transmission of Basic A-MSDUs | 8.3.2.2.2 (Basic A-MSDU subframe format), 8.2.4.5 (QoS Control field) | CF25:O | Yes  No  N/A  |
| \*DMG-M3.5 | Reception of Short A-MSDU | 8.2.4.5 (QoS Control field), 8.3.2.2.3 (Short A-MSDU subframe format) | CF25:O | Yes  No  N/A  |
| DMG-M3.6 | Short A-MSDU format | 8.3.2.2.3 (Short A-MSDU subframe format) | (DMG-M3.5 OR DMG-M3.8):M | Yes  No  N/A  |
| DMG-M3.7 | Short A-MSDU content | 8.3.2.2.3 (Short A-MSDU subframe format) | (DMG-M3.5 OR DMG-M3.8):M | Yes  No  N/A  |
| \*DMG-M3.8 | Transmission of Short A-MSDU | 8.3.2.2.3 (Short A-MSDU subframe format), 8.2.4.5 (QoS Control field) | CF25:O | Yes  No  N/A  |
| DMG-M3.9 | Negotiation of Short A-MSDU usage | 8.4.2.29 (TSPEC element) | CF25:M | Yes  No  N/A  |
| DMG-M4 | MPDU aggregation |  |  |  |
| DMG-M4.1 | Reception of A-MPDU***Reference corrected. I suspect the reference to Dynamic Tone Pairing is wrong.*** | 8.4.2.127.2 (DMG STA Capability Information field), 10.3 (STA authentication and association), 9.12.2 (A-MPDU length limit rules), 8.4.2.145 (Dynamic Tone Pairing (DTP) Report element) | CF25:M | Yes  No  N/A  |
| DMG-M4.2 | A-MPDU format | 8.7.1 (A-MPDU format) | CF25:M | Yes  No  N/A  |
| DMG-M4.3 | A-MPDU content | 8.7.3 (A-MPDU contents) | CF25:M | Yes  No  N/A  |
| DMG-M4.4 | * Transmission of A-MPDU***Bogus reference: 8.4.2.111.2*** * ***Probably wrong reference 11.3***   ***Probable wrong reference to DTP*** | 8.4.2.111.2, 11.3 (Authentication using a password), 8.4.2.145 (Dynamic Tone Pairing (DTP) Report element) | CF25:O | Yes  No  N/A  |
| DMG-M5 | A-PPDU aggregation | 9.13a9.14 (DMG A-PPDU operation) |  |  |
| \*DMG-M5.1 | Reception of A-PPDU | 8.4.2.127.2 (DMG STA Capability Information field) | CF25:O | Yes  No  N/A  |
| DMG-M5.2 | A-PPDU format | 21.5.2 (PPDU format), 21.6.2 (PPDU format) | (DMG-M5.1 OR DMG-M5.3):M | Yes  No  N/A  |
| \*DMG-M5.3 | Transmission of A-PPDU | 8.4.2.127.2 (DMG STA Capability Information field) | CF25:O | Yes  No  N/A  |
| \*DMG-M6 | Reverse direction aggregation exchanges | 9.26 (Reverse direction protocol), 8.4.2.127.2 (DMG STA Capability Information field) | CF25:O | Yes  No  N/A  |
| DMG-M6.1 | Constraints regarding responses | 9.26.4 (Rules for RD initiator) | DMG-M6:M | Yes  No  N/A  |
| DMG-M7 | DMG channel access |  |  |  |
| DMG-M7.1 | ATI transmission |  |  |  |
| DMG-M7.1.1 | Transmission of Request | 9.34.3 (ATI transmission rules) | CF25 AND (CF1 OR CF2.4.1):O | Yes  No  N/A  |
| DMG-M7.1.2 | Reception of Request | 9.34.3 (ATI transmission rules) | CF25 AND (CF2.1 OR CF2.4.2):M | Yes  No  N/A  |
| DMG-M7.1.3 | Transmission of Response | 9.34.3 (ATI transmission rules) | CF25 AND (CF2.1 OR CF2.4.2):M | Yes  No  N/A  |
| DMG-M7.1.4 | Reception of Response | 9.34.3 (ATI transmission rules) | CF25 AND (CF1 OR CF2.4.1):M | Yes  No  N/A  |
| DMG-M7.2 | DTI transmission | 9.34.4 (DTI transmission rules) | CF25:M | Yes  No  N/A  |
| DMG-M7.3 | Time allocation |  |  |  |
| \*DMG-M7.3.1 | * Service period (SP) allocation***Reference to ADDBA extension is probably wrong***   ***Reference to PCP Handover element is probably wrong*** | 9.34.6.2 (Service period (SP) allocation), 8.4.2.138 (ADDBA Extension element ), 8.4.2.140 (PCP Handover element ) | CF25 AND (CF1 OR CF2.4.1):O | Yes  No  N/A  |
| \*DMG-M7.3.2 | CBAP allocation***Reference to ADDBA Extension element is probably wrong*** | 9.34.6.2 (Service period (SP) allocation), 8.4.2.138 (ADDBA Extension element ) | CF25 AND (CF1 OR CF2.4.1):O | Yes  No  N/A  |
| DMG-M7.3.3 | Interpretation of allocation ***Reference to ADDBA Extension element is probably wrong*** | 9.34.6.2 (Service period (SP) allocation), 9.34.6.2 (Service period (SP) allocation), 8.4.2.138 (ADDBA Extension element ) | CF25 AND (CF1 OR CF2.1 OR CF2.2 OR CF2.4.1 OR CF2.4.2):M | Yes  No  N/A  |
| \*DMG-M7.4 | Contention-based access period | 9.34.5 (Contention-based access period (CBAP) transmission rules), 9.34.6.2 (Service period (SP) allocation) | CF25:M | Yes  No  N/A  |
| DMG-M7.4.1 | Distributed coordination function (DCF) |  |  |  |
| DMG-M7.4.1.1 | Network allocation vector (NAV) function | 9.3.2.2 (MAC-Level Acknowledgments), 9.3.4 (DCF access procedure), 9.34.10 (Updating multiple NAV timers) | DMG-M7.4:M | Yes  No  N/A  |
| DMG-M7.4.1.2 | Interframe space usage and timing | 9.3.2.4, 9.3.4 (DCF access procedure), 9.3.7 (DCF timing relations) | DMG-M7.4:M | Yes  No  N/A  |
| DMG-M7.4.1.3 | Random Backoff function | 9.3.3 (Random backoff time) | DMG-M7.4:M | Yes  No  N/A  |
| DMG-M7.4.1.4 | DCF Access procedure | 9.3 (DCF), 9.3.4.2 (Basic access), 9.3.4.5 (Control of the channel) | DMG-M7.4:M | Yes  No  N/A  |
| DMG-M7.4.1.5 | Random Backoff procedure | 9.3 (DCF), 9.3.4.3 (Backoff procedure for DCF) | DMG-M7.4:M | Yes  No  N/A  |
| DMG-M7.4.1.6 | Recovery procedures and retransmit limits | 9.3.4.4 (Recovery procedures and retransmit limits) | DMG-M7.4:M | Yes  No  N/A  |
| DMG-M7.4.1.7 | Request to send (RTS)/DMG clear to send (DMG CTS) procedure***Reference to Dual CTS protection is probably wrong*** | 9.3.2.5, 9.34.10 (Updating multiple NAV timers), 9.3.2.6 (CTS and DMG CTS procedure), 9.3.2.7 (Dual CTS protection) | DMG-M7.4:M | Yes  No  N/A  |
| DMG-M7.4.1.8 | Directed MAC protocol data unit (MPDU) transfer | 9.3.5 (Individually addressed MPDU transfer procedure) | DMG-M7.4:M | Yes  No  N/A  |
| DMG-M7.4.1.9 | Group addressed MPDU transfer | 9.3.6 (Group addressed MPDU transfer procedure) | DMG-M7.4:M | Yes  No  N/A  |
| DMG-M7.4.1.10 | MAC-level acknowledgment***Reference to IFS questionable*** | 9.3.2.3 (IFS), 9.3.2.9 (Block Ack procedure) | DMG-M7.4:M | Yes  No  N/A  |
| DMG-M7.4.1.11 | Duplicate detection and recovery***Reference corrected*** | 9.3.2.10 (Duplicate detection and recovery) | DMG-M7.4:M | Yes  No  N/A  |
| DMG-M7.4.2 | Enhanced DCF (EDCA) |  |  |  |
| \*DMG-M7.4.2.1 | Support for one transmit queue with AC\_BE access category | 9.2.4.2 (HCF contention-based channel access (EDCA)), 9.20.2.1 (Reference implementation) | DMG-M7.4:M | Yes  No  N/A  |
| DMG-M7.4.2.2 | Support for four transmit queues with a separate channel access entity associated with each | 9.2.4.2 (HCF contention-based channel access (EDCA)), 9.20.2.1 (Reference implementation) | DMG-M7.4.2.1:O | Yes  No  N/A  |
| DMG-M7.4.2.3 | AC\_BE access category and differentiated channel access | 9.20.2.2 (EDCA TXOPs), 9.20.2.3 (Obtaining an EDCA TXOP), 9.20.2.5 (EDCA backoff procedure) | DMG-M7.4.2.1:M | Yes  No  N/A  |
| DMG-M7.5 | Pseudo-static allocation |  |  |  |
| DMG-M7.5.1 | Scheduling of pseudo-static allocation***Reference to PREQ questionable. Also possibly PCP handover.*** | 9.34.6.2 (Service period (SP) allocation), 8.4.2.112 (PREQ element), 8.4.2.140 (PCP Handover element ), 9.34.6.5 (Guard time), 10.4.13.2 (Isochronous allocations) | DMG-M7.3.1:O | Yes  No  N/A  |
| DMG-M7.5.2 | Operation within pseudo-static allocation***Reference to PCP handover element is questionable*** | 9.34.6.2 (Service period (SP) allocation), 9.34.6.4 (Pseudo-static allocations), 8.4.2.138 (ADDBA Extension element ), 8.4.2.140 (PCP Handover element ) | CF25 AND (CF1 OR CF2.1 OR CF2.4.1 OR CF2.4.2):M | Yes  No  N/A  |
| DMG-M7.6 | Guard time | 9.34.6.5 (Guard time) | DMG-M7.3.1:M | Yes  No  N/A  |
| DMG-M7.7 | DMG protected period |  |  |  |
| \*DMG-M7.7.1 | Establishment of DMG protected period with RTS at source DMG STA | 9.34.6.6 (DMG Protected Period) | DMG-M7.3.1:O | Yes  No  N/A  |
| \*DMG-M7.7.2 | Acceptance to establish DMG protected period with DMG CTS at destination DMG STA | 9.34.6.6 (DMG Protected Period) | DMG-M7.3.1:M | Yes  No  N/A  |
| DMG-M7.7.3 | Transmission of DMG DTS at destination DMG STA | 9.34.6.6 (DMG Protected Period) | DMG-M7.7.2:O | Yes  No  N/A  |
| DMG-M7.7.4 | Reception of DMG DTS at source DMG STA | 9.34.6.6 (DMG Protected Period) | DMG-M7.7.1:M | Yes  No  N/A  |
| DMG-M7.8 | Service period recovery | 9.34.6.7 (Service period recovery) | DMG-M7.3.1&(CF1 OR CF2.4.1):O | Yes  No  N/A  |
| DMG-M7.9 | Dynamic allocation of service period | 9.34.7 (Dynamic allocation of service period) |  |  |
| DMG-M7.9.1 | Polling period (PP) | 9.34.7.2 (Polling period (PP)), 8.4.2.142 |  |  |
| DMG-M7.9.1.1 | Transmission of Poll | 8.3.1.11 (Poll frame format) | CF25 AND (CF1 OR CF2.4.1):O | Yes  No  N/A  |
| DMG-M7.9.1.2 | Reception of Poll | 8.3.1.11 (Poll frame format) | CF25 AND (CF2.1 OR CF2.4.2):M | Yes  No  N/A  |
| DMG-M7.9.1.3 | Transmission of SPR | 8.3.1.12 (Service Period Request (SPR) frame format) | CF25 AND (CF2.1 OR CF2.4.2):M | Yes  No  N/A  |
| DMG-M7.9.1.4 | Reception of SPR | 8.3.1.12 (Service Period Request (SPR) frame format) | CF25 AND (CF1 OR CF2.4.1):M | Yes  No  N/A  |
| DMG-M7.9.2 | Grant period (GP) | 9.34.7.3 (Grant period (GP)) |  |  |
| DMG-M7.9.2.1 | Transmission of Grant | 8.3.1.13 (Grant frame format) | CF25 AND (CF1 OR CF2.4.1):O | Yes  No  N/A  |
| DMG-M7.9.2.2 | Reception of Grant | 8.3.1.13 (Grant frame format) | CF25 AND (CF2.1 OR CF2.4.2):M | Yes  No  N/A  |
| DMG-M7.10 | Dynamic truncation of service period | 9.34.8 (Dynamic truncation of service period) |  |  |
| DMG-M7.10.1 | Transmission of CF-End | 8.3.1.6 (CF-End frame format) | CF25:O | Yes  No  N/A  |
| DMG-M7.10.2 | Reception of CF-End | 8.3.1.6 (CF-End frame format) | CF25:M | Yes  No  N/A  |
| DMG-M7.11 | Dynamic extension of service period | 9.34.9 (Dynamic extension of service period) |  |  |
| DMG-M7.11.1 | Transmission of SPR | 8.3.1.12 (Service Period Request (SPR) frame format) | CF25 AND (CF2.1 OR CF2.4.2):O | Yes  No  N/A  |
| DMG-M7.11.2 | Reception of SPR | 8.3.1.12 (Service Period Request (SPR) frame format) | CF25 AND (CF1 OR CF2.4.1):M | Yes  No  N/A  |
| DMG-M7.11.3 | Transmission of Grant | 8.3.1.13 (Grant frame format) | CF25 AND (CF1 OR CF2.4.1):O | Yes  No  N/A  |
| DMG-M7.11.4 | Reception of Grant | 8.3.1.13 (Grant frame format) | CF25 AND (CF2.1 OR CF2.4.2):M | Yes  No  N/A  |
| DMG-M7.12 | Isochronous and Asynchronous TS support |  |  |  |
| DMG-M7.12.1 | * Isochronous operation***Reference to ADDBA extension... questionable***   ***Reference to PCP handover questionable*** | 10.4.13.2 (Isochronous allocations), 8.4.2.138 (ADDBA Extension element ), 8.4.2.140 (PCP Handover element ) | DMG-M7.3.1 AND (CF1 OR CF2.1 OR CF2.4.1 OR CF2.4.2):M | Yes  No  N/A  |
| DMG-M7.12.2 | * Asynchronous operation ***Reference to ADDBA extension... questionable***   ***Reference to PCP handover questionable*** | 10.4.13.3, 8.4.2.138 (ADDBA Extension element ), 8.4.2.140 (PCP Handover element ), 8.3.1.12 (Service Period Request (SPR) frame format) | DMG-M7.3.1 AND (CF1 OR CF2.1 OR CF2.4.1 OR CF2.4.2):M | Yes  No  N/A  |
| DMG-M8 | PCP/AP clustering |  |  |  |
| DMG-M8.1 | S-AP in centralized PCP/AP cluster | 9.35 (DMG PCP/AP clustering) | CF25:O | Yes  No  N/A  |
| DMG-M8.2 | Except when centralized PCP/AP clusters on all channels supported by the PCP/AP in the operating class, join a centralized PCP/AP cluster or cease activity on channel | 9.35.2.2 (Centralized PCP/AP cluster formation) | CF25 AND (CF1 OR CF2.4.1) AND NOT DMG-M8.1:M | Yes  No  N/A  |
| DMG-M8.3 | Other PCP/AP clustering | 9.35 (DMG PCP/AP clustering) | CF25:O | Yes  No  N/A  |
| DMG-M9 | DMG beamforming |  |  |  |
| DMG-M9.1 | Sector level sweep | 9.36.2 (Sector-level sweep (SLS) phase), 9.36.6.2 (SLS phase execution) | CF25:M | Yes  No  N/A  |
| DMG-M9.2 | Beamforming in BTI | 9.36.4 (Beamforming in BTI) | CF25:M | Yes  No  N/A  |
| DMG-M9.3 | Beamforming in A-BFT | 9.36.5 (Beamforming in A-BFT) | CF25:M | Yes  No  N/A  |
| DMG-M9.4 | BRP setup | 9.36.3.2 (BRP setup subphase) | CF25:M | Yes  No  N/A  |
| DMG-M9.5 | MID | 9.36.6.3.3 (MIDC subphase with MID subphase only) | CF25:O | Yes  No  N/A  |
| DMG-M9.6 | BC | 9.36.6.3.4 (MIDC subphase with BC subphase only) | CF25:O | Yes  No  N/A  |
| DMG-M9.7 | BRP |  |  |  |
| \*DMG-M9.7.1 | BRP with BS-FBCK | 9.36.3 (Beam Refinement Protocol (BRP) phase), 9.36.6.4 (BRP phase execution) | CF25:M | Yes  No  N/A  |
| DMG-M9.7.2 | BRP with channel measurement | 9.36.3 (Beam Refinement Protocol (BRP) phase), 9.36.6.4 (BRP phase execution) | DMG-M9.7.1:O | Yes  No  N/A  |
| DMG-M9.8 | Beam tracking | 9.36.7 (Beam tracking) | CF25:M | Yes  No  N/A  |
| DMG-M10 | DMG Block (#1198)Ack with flow control | 9.37 (DMG Block Ack with flow control), 8.4.2.127.2 (DMG STA Capability Information field) | CF25:O | Yes  No  N/A  |
| DMG-M11 | DMG link adaptation | 9.38 (DMG link adaptation) | CF25:O | Yes  No  N/A  |
| DMG-M12 | DMG dynamic tone pairing (DTP) | 9.39 (DMG dynamic tone pairing (DTP)), 8.4.2.127.2 (DMG STA Capability Information field) | CF25:O | Yes  No  N/A  |
| DMG-M13 | Timing synchronization function (TSF) in a PBSS |  |  |  |
| DMG-M13.1 | Timing in a PBSS network | 10.1.2.1 (TSF for infrastructure and PBSS networks), 10.1.5 (Adjusting STA timers) | CF2.4.1&CF25:M | Yes  No  N/A  |
| DMG-M13.2 | PBSS initialization | 10.1.4 (Acquiring synchronization, scanning) | CF2.4.1&CF25:M | Yes  No  N/A  |
| DMG-M14 | Power management |  |  |  |
| DMG-M14.1 | STA power management without wakeup schedule | 10.2.6.2.2 (Powermanagement mode operation of a non-PCP/non-AP STA with no wakeup schedule), 10.2.6.2.4 (Power management mode operation of a non-PCP/non-AP STA with or without a wakeup schedule) | CF25:M | Yes  No  N/A  |
| DMG-M14.2 | STA power management with wakeup schedule***Reference to Multiband element questionable*** | 10.2.6.2.3 (Power management mode operation of a non-PCP/non-AP STA with a wakeup schedule), 10.2.6.2.4 (Power management mode operation of a non-PCP/non-AP STA with or without a wakeup schedule), 8.4.2.137 (Multi-band element) | CF25:O | Yes  No  N/A  |
| DMG-M14.3 | PCP power management***Reference to Multiband element questionable*** | 10.2.6.3 (PCP Power management mode), 8.4.2.137 (Multi-band element) | CF25:O | Yes  No  N/A  |
| DMG-M15 | Authentication and association |  |  |  |
| DMG-M15.1 | Association state | 10.3.1 (State variables) | M | Yes  No  |
| DMG-M15.2 | STA association procedure | 10.3.5.2 (Non-PCP/Non-AP STA association initiation procedures) | CF2.1 & CF25:M  CF2.4.2 & CF25:O | Yes  No  N/A  |
| DMG-M15.3 | PCP/AP association procedure | 10.3.5.3 (PCP/AP association receipt procedures) | CF1 & CF25:M  CF2.4.1 & CF25:O | Yes  No  N/A  |
| DMG-M15.4 | Communicating PBSS information | 10.3.7 (Communicating PBSS information) | (CF2.4.1 OR CF2.4.2) & CF25:M | Yes  No  N/A  |
| DMG-M16 | DMG beamformed link and BSS maintenance |  |  |  |
| DMG-M16.1 | Beamformed link maintenance |  |  |  |
| \*DMG-M16.1.1 | Negotiation of dot11BeamLinkMaintenanceTime timer***Probably wants a reference to clause 9 or 10*** | 8.5.6 (Beamformed Link Maintenance field) | CF25:M | Yes  No  N/A  |
| DMG-M16.1.2 | Beamformed link maintenance procedure | 10.29.1 (Beamformed link maintenance) | DMG-M16.1.1:O | Yes  No  N/A  |
| DMG-M16.2 | PCP handover | 10.29.2 (PCP Handover) | CF25:O | Yes  No  N/A  |
| DMG-M17 | DMG BSS Peer and Service Discovery | 10.30 (DMG BSS peer and service discovery) | CF25:M(M34) | Yes  No  N/A  |
| DMG-M18 | Changing DMG BSS parameters | 10.31 (Changing DMG BSS parameters) | CF25:O | Yes  No  N/A  |
| \*DMG-M19 | Spatial sharing and interference mitigation | 10.32 (Spatial sharing and interference mitigation for DMG STAs) | CF25:O | Yes  No  N/A  |
| DMG-M20 | DMG Coexistence with other DMG systems | 10.35 (DMG coexistence with non-IEEE-802.11 systems) | CF25:O | Yes  No  N/A  |
| DMG-M21 | Traffic specification (TSPEC and DMG TSPEC) and associated frame formats | 8.6.3 (QoS Action frame details) | CF25:M | Yes  No  N/A  |
| DMG-M22 | DMG frame formats |  |  |  |
| DMG-M22.1 | DMG Action field | 8.6.20.1 (DMG Action field) | CF25:M | Yes  No  N/A  |
| DMG-M22.2 | Announce frame | 8.6.22.2 (Announce frame format) | CF25:M | Yes  No  N/A  |
| DMG-M22.3 | Power Save Configuration | 8.6.20.2 (Power Save Configuration Request frame format), 8.6.20.3 (Power Save Configuration Response frame format) | CF25:M | Yes  No  N/A  |
| DMG-M22.4 | Information Request/Response | 8.6.20.4 (Information Request frame format), 8.6.20.5 (Information Response frame format) | CF25:M | Yes  No  N/A  |
| DMG-M22.5 | BRP | 8.6.22.3 (BRP frame format) | CF25:M | Yes  No  N/A  |
| DMG-M22.6 | Handover | 8.6.20.6 (Handover Request frame format), 8.6.20.7 (Handover Response frame format) | DMG-M16.2:M | Yes  No  N/A  |
| DMG-M22.7 | DTP | 8.6.20.8 (DTP Request frame format), 8.6.20.9 (DTP Report frame format) | DMG-M12:M | Yes  No  N/A  |
| DMG-M22.8 | DMG relay | 8.6.20.10 (Relay Search Request frame format) – 8.6.20.24 (ROC Response frame format) | DMG-M23:M | Yes  No  N/A  |
| DMG-M23 | DMG relay | 9.39 (DMG dynamic tone pairing (DTP)), 10.36 (DMG relay procedures) | CF25:O | Yes  No  N/A  |



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| * **DMG PHY features** | | | | |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
|  | Are the following PHY protocol features supported? |  |  |  |
| DMG-P1 | PHY operating modes |  |  |  |
| DMG-P1.1 | Operation according to Clause 21 (Directional multi-gigabit (DMG) PHY specification) | Clause 21 (Directional multi-gigabit (DMG) PHY specification) | CF25:M | Yes  No  N/A  |
| DMG-P2 | PHY(motion\_32) frame format |  |  |  |
| \*DMG-P2.1 | Control PHY(motion\_32) format | 21.4 (DMG control PHY) | CF25:M | Yes  No  N/A  |
| \*DMG-P2.2 | SC PHY(motion\_32) format | 21.6 (DMG SC PHY) | CF25:M | Yes  No  N/A  |
| \*DMG-P2.3 | OFDM PHY(motion\_32) format | 21.5 (DMG OFDM PHY) | CF25:O | Yes  No  N/A  |
| \*DMG-P2.4 | Low-power SC PHY(motion\_32) format | 21.7 (DMG low-power SC PHY) | CF25:O | Yes  No  N/A  |
| DMG-P2.5 | Modulation and coding schemes (MCS) |  |  |  |
| DMG-P2.5.1 | MCS 0 of control PHY |  | DMG-P2.1:M | Yes  No  N/A  |
| DMG-P2.5.2 | MCS 1-12 of SC PHY |  |  |  |
| DMG-P2.5.2.1 | MCS 1-4 |  | DMG-P2.2:M | Yes  No  N/A  |
| DMG-P2.5.2.2 | MCS 5-12 |  | DMG-P2.2:O | Yes  No  N/A  |
| DMG-P2.5.3 | MCS 13-24 of OFDM PHY |  |  |  |
| DMG-P2.5.3.1 | MCS 13-17 |  | DMG-P2.3:M | Yes  No  N/A  |
| DMG-P2.5.3.2 | MCS 18-24 |  | DMG-P2.3:O | Yes  No  N/A  |
| DMG-P2.5.4 | MCS 25-31 of low-power SC PHY |  | DMG-P2.4:M | Yes  No  N/A  |
| DMG-P2.6 | Common preamble format | 21.3.6 (Common preamble) | CF25:M | Yes  No  N/A  |
| DMG-P2.7 | Use of LDPC codes | 21.3.8 (Common LDPC parity matrices) | CF25:M | Yes  No  N/A  |

## Proposed resolution

127 and 269: REVISED. See Proposed changes in 12/1345r$last\_revision, which agree in principle with the commenter.

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