IEEE P802.11  
Wireless LANs

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| IEEE P802.11bk/D2.0 Mandatory Draft Review (MDR) Report | | | | |
| Date: 2024-07-02 | | | | |
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**Abstract**

This document contains the report of the IEEE P802.11bk D2.0 Mandatory Draft Review.

R0: section headings.

R1: incorporating all reviews.

# Introduction

## Purpose of this document

This document is the report from the group of volunteers that participated in the P802.11bk/D2.0 mandatory draft review.

This document contains recommendations for changes to the P802.11bk draft to bring it into improved compliance to IEEE-SA and WG11 style.

The recommended changes need to be reviewed by TGbk and approved, or ownership of the issues taken by TGbk.

## Process / references

The MDR process is described in:

* [11-11/615r6](https://mentor.ieee.org/802.11/dcn/11/11-11-0615-06-0000-wg802-11-mec-process.doc) – WG802.11 MEC Process

And references:

* [11-09/1034r21](https://mentor.ieee.org/802.11/dcn/09/11-09-1034-21-0000-802-11-editorial-style-guide.docx) – 802.11 Editorial Style Guide

A setup meeting will be held with and review topics assigned to volunteers. The review comments from the volunteers will be compiled into this document.

## Acknowledgements

The 802.11 technical editors (Robert Stacey and Emily Qi) gratefully acknowledge the work and contribution of the members listed in the authors list.

# Findings

## Style

### Style Gude 2.1 – Frames

#### Style Guide 2.1.1 – Frame Format Figures

#### Emily:

#### 27.15: is Figure 9-1047a a new figure? If it is a new figure, there is no underline needed. Remove all underlines in the figure,

#### Style Guide 2.1.2 – Naming Frames

Emily

No error found.

### Style Guide 2.2 – true/false

Volker

87, row 8 in Table 36-1: “False” used at the start of a sentence. Change to “The value false indicates…”

### Style Guide 2.3 – “is set to”

Joseph: No issues found, all uses of “is set to” in the draft are acceptable.

### Style Guide 2.4 – Information Elements/Subelements

#### Style Guide 2.4.1 – Information Elements/subelements – Naming

Jonathan

#### Style Guide 2.4.2 – Definition Conventions

Mark

***320 MHz Ranging subelement (P27.14):***

Despite the examples in REVme 9.4.2.300 (Ranging Parameters element) which the 802.11bk amendment followed carefully, it is not okay to just say,

“The Subelement ID and Length fields are defined in 9.4.3 (Subelements).”

This is in fact not true (for the Subelement ID). 9.4.3 has no specifics for each of the different Subelement IDs (which are context dependent). That information for the subelements of Ranging Parameters is in Table 9-414.

So, it seems the correct “fix” goes into REVme, for the subelements in this subclause (which came in from 11az).

That said, 9.4.2.19.5 seems to provide a good example of how this could/should be specified, so copying from that example, recommend changing the text at P27.15 through P28.1 to that style:

The ~~format of the~~ 320 MHz Ranging subelement Data field format is as shown in Figure 9-1047a (320MHz Ranging subelement Data field format).

The Subelement ID field value is defined in Table 9-414. The ~~Subelement ID and~~ Length field~~s are~~ is defined in 9.4.3.

*Change Figure 9-1047a title to “320 MHz Ranging subelement Data field format” and delete the fields for Subelement ID and Length from the figure.*

Separately from this MDR, it seems a REVme initiative is needed to do similar changes to other (pre-existing) subelement definitions in this subclause.

***Secure ~~HE~~-LTF Parameters element (P28.27):***

With the name change to this element, the Table 9-130 in 9.4.2.1 should be shown with a modification to the Element name there, also:

***Modify Table 9-130 as shown:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Secure ~~HE-~~LTF Parameters (see  9.4.2.301 (Secure ~~HE-~~LTF Parameters  element(11az))) | 255 | 94 | Yes | No |

#### Style Guide 2.4.3 – Element Inclusion Conventions

Jonathan

### Style Guide 2.5 – Removal of functions and features

Roy: No functions or features have been removed or deprecated in this draft amendment.

### Style Guide 2.6 – Capitalization

Ross

15, line 16: Change “Null-sequence authentication code (SAC)-long training field (LTF):” to “Null-Sequence Authentication Code (SAC)-Long Training field (LTF)”

Page 15, line 19: Change “sequence authentication code (SAC) subfield” to “Sequence Authentication Code (SAC) subfield”

Page 19, line 15: Change “Figure 9-102 (Trigger Dependent Common Info subfield format for the Ranging Trigger subvariants Poll, sounding, secure sounding and Report)” to “Figure 9-102 (Trigger Dependent Common Info subfield format for the Ranging Trigger subvariants Poll, Sounding, Secure Sounding and Report)”

5: Change “Measurement Sounding phase” to “measurement sounding phase”

Page 23, line 17: Change two “Rsvd.” to “Reserved”

1: Change “FTM Synchronization information (optional)” to “FTM Synchronization Information (optional)”

Page 36, line 15: Change “Polling, Measurement Sounding and Measurement Reporting phases” to “polling, measurement sounding and measurement reporting phases”

Page 36, line 23: Change “Polling phase, Measurement Sounding phase and Measurement Reporting phase” to “polling phase, measurement sounding phase and measurement reporting phase”

Page 36, line 26: Change “Polling, Measurement Sounding and Measurement Reporting phases” to “polling, measurement sounding and measurement reporting phases”

Page 36, line 28: Change “Polling, Measurement Sounding, and Measurement Reporting phases” to “polling, measurement sounding, and measurement reporting phases”

Page 36, line 30, in the figure: Change “Measurement Sounding Phase” to “Measurement sounding phase” twice, change “Measurement Reporting phase” to “Measurement reporting phase” twice, change “Availability Window” to “Availability window” twice.

Page 37, line 13: Change “11.21.6.4.3.3 (Measurement Sounding phase of TB ranging)” to “11.21.6.4.3.3 (Measurement sounding phase of TB ranging)”

Page 37, line 14: Change “11.21.6.4.3.4 (Reporting Phase of TB ranging Measurement).” to “11.21.6.4.3.4 (Reporting phase of TB ranging measurement).”

Page 38, line 14: Change “11.21.6.4.3.3 (Measurement Sounding phase of TB ranging)” to “11.21.6.4.3.3 (Measurement sounding phase of TB ranging)”

Page 38, line 17, in the figure: Change “Measurement Sounding phase” to “Measurement sounding phase” twice, change “Measurement Reporting phase” to “Measurement reporting phase” twice.

Page 38, line 21, in the figure: Change “Measurement Sounding phase” to “Measurement sounding phase” twice, change “Measurement Reporting phase” to “Measurement reporting phase” twice.

Page 39, line 18: Change “subsequent Polling, Measurement Sounding and Measurement Reporting phases” to “subsequent polling, measurement sounding and measurement reporting phases”

Page 39, line 31, in the figure: Change “Measurement Sounding phase” to “Measurement sounding phase”, change “Measurement Reporting phase” to “Measurement reporting phase”.

Page 40, line 1: Change “Measurement Sounding phase” to “Measurement sounding phase”

Page 42, line 21, in the figure: Change “Measurement Sounding phase” to “Measurement sounding phase”, change “Measurement Reporting phase” to “Measurement reporting phase”.

Page 43, line 17: Change “Measurement Sounding phase” to “measurement sounding phase”

Page 46, line 33: Change “Measurement Sounding phase” to “measurement sounding phase”

Page 47, line 29, in the figure: Change “Polling Phase” to “Polling phase”, change “Measurement Sounding Phase” to “Measurement sounding phase”, change “Measurement Reporting Phase” to “Measurement reporting phase”.

Page 49, line 1, in the figure: Change “Measurement Sounding phase” to “Measurement sounding phase”, change “Measurement Reporting phase” to “Measurement reporting phase”.

Page 52, line 8: Change “Measurement Sounding phase” to “measurement sounding phase”

Page 53, line 25, in the figure: Change “Measurement Sounding” to “Measurement sounding” twice.

Page 54, line 1, in the figure: Change “Measurement Sounding” to “Measurement sounding” twice.

Page 54, line 18, in the figure: Change “Measurement Exchange Sequence” to “Measurement exchange sequence”, change “Max Time Between Measurements” to “Max time between measurements”, change “Min Time Between Measurements” to “Min time between measurements”

Page 55, line 1, in the figure: Change “Measurement Sounding phase” to “Measurement sounding phase”, change “Measurement Reporting phase” to “Measurement reporting phase”.

Page 78, line 13: Change “Figure 11-68 (Passive TB ranging polling, Measurement Sounding, and Measurement Reporting phases)” to “Figure 11-68 (Passive TB ranging polling, measurement sounding, and measurement reporting phases)”

Page 78, line 15, in the figure: Change “Polling Phase” to “Polling phase”, change “Measurement Sounding Phase” to “Measurement sounding phase”, change “Measurement Reporting Phase” to “Measurement reporting phase”.

Page 80, line 13: Change “Measurement Sounding phase” to “measurement sounding phase”

Page 80, line 16: Change “11.21.6.4.3.3 (Measurement Sounding phase of TB ranging)” to “11.21.6.4.3.3 (Measurement sounding phase of TB ranging)”

Page 82, line 1, in the figure: Change “Polling Phase” to “Polling phase”, change “Measurement Sounding Phase” to “Measurement sounding phase”, change “Measurement Reporting Phase” to “Measurement reporting phase”.

Page 106, line 16, in the figure: Change “Period” to “period” three times.

### Style Guide 2.7 – Terminology: frame vs packet vs PPDU vs MPDU

Ross

Doesn’t exist

### Style Guide 2.8 – Use of verbs & problematic words

#### normative, non-normative, ensure

Mark

P28.23, “The maximum number of EHT-LTFs limits the allowed combinations of …” This feels like a requirement without a normative verb. Can this be reworded?

P32.21, is this “may” correct? Is there more that should be specified? (Such as, if the bandwidth may be 320 MHz, may it also be something else worth stating?)

[Out of scope, but: P44.8, is this NOTE really a requirement (that should include a normative verb, and not be a NOTE)? Can we fix it now (if it should be fixed)?]

[Out of scope, but: P46.6 – P46.11: This NOTE contains many ‘should’s. Can we fix those now?]

P90.10, is this “only” necessary. It seems sufficient to say it contains a Common field and no User Specific field, without the “only”.

P91.9, Should this “only” be “exactly”?

P91.19, “are disallowed” looks like a requirement without a normative verb. Reword this with a “shall not” structure. Same thing at P94.21.

P92.25, “will” -> “shall”

P100.12, is an adjective missing in the first phrase of, “Transmission … may start if ..”? Compare to the “and” phrase, which is “shall start \_immediately\_ if…”

#### Style Guide 2.8.1 – which/that

Carol

35.20 - , the RSTA shall set the RSTA assigned R2I Rep to the Max R2I Repetition subfield value in the IFTMR frame ~~which~~ that shall be greater than 0

39.4 - Each Polling phase instance includes at least one Poll Ranging Trigger frame, see 9.3.1.22.10 (Ranging Trigger variant), and no more than one in which it receives a response from at least one ISTA; The Ranging variant Trigger frame of poll is called the TF Ranging Poll frame.

40.21 - The Ranging NDP Announcement frame’s STA Info fields specify all the ISTAs that will use the R2I NDP, ~~which~~ that shall include the ISTAs that were allocated uplink resources in the measurement sounding phase.

54.11 - The Dialog Token field of the LMR frame shall be copied from the Sounding Dialog Token Number subfield in the Ranging NDP Announcement frame that preceded the NDP ~~which is~~ used for the reported measurement.

58.5 - the RSTA shall transmit a Secure Sounding Ranging Trigger frame ~~which~~ that includes a single User Info field to trigger a single ISTA at a time.

74.3 and 74.7 - If the FORMAT parameter is equal to HE\_SU, Tthe TXOP\_DURATION parameter is set to either 127 or a value defined in Equation (26-3), replacing DHE\_NDPA by DRanging\_NDP\_Announcement, which is the Duration/ID field in the MAC header of the preceding Ranging NDP Announcement frame.

— If the FORMAT parameter is equal to EHT\_MU, the TXOP\_DURATION parameter is set to either 127 or a value defined in Equation (35-3), replacing DEHT\_NDPA by DRanging\_NDP\_Announcement, which is the Duration/ID field in the MAC header of the preceding Ranging NDP Announcement frame.

on page 75, lines 23, 27, 32 and 37 all need commas before the *which*.

99.30 - TRAINING\_FIELD is L-LTF windowed in a manner ~~which~~ that should approximate the windowing described in 17.3.2.5 (Mathematical conventions in the signal descriptions) with TTR = 100 ns.

58.27 - the LTF\_KEY and LTF\_IV parameters ~~that are~~ set to ista-ltf-key and ltf-iv for generating

60.13 - the ISTA shall send an HE TB Ranging NDP or EHT TB Ranging NDP with the TXVECTOR parameters LTF\_KEY and LTF\_IV ~~that are~~ set to ista-ltf-key and ltf-iv for generating the secure HE/EHT-LTF

60.23 - the ISTA shall send an HE TB 22 Ranging NDP or EHT TB Ranging NDP with the TXVECTOR parameters LTF\_KEY and LTF\_IV 23 ~~that are~~ set to the ista-ltf-key and ltf-iv for generating any secure HE/EHT-LTF

60.36 - the LTF\_KEY and LTF\_IV parameters ~~that are~~ set to the rsta-ltf-key and ltf-iv for…

Page 61.9 – stray carriage return

64.34 - the LTF\_KEY and LTF\_IV parameters ~~that are~~ set to either to the value of Null-SAC-HE LTF, if the SAC subfield in the STA Info field with AID11 equal to 2043 in the Ranging NDP Announcement frame is equal to 0~~; Or~~ or the rsta-ltf-key and ltf-iv for generating a secure HE/EHT-LTF

65.42 - the LTF\_KEY and LTF\_IV parameters ~~that are~~ set to the ista-ltf-key and ltf-iv for receiving a secure HE/EHT-LTF

#### Style Guide 2.8.2 – articles

#### Style Guide 2.8.3 – missing nouns (Roy)

The ‘frame’ noun should be added to LMR at the following lines

P49L14, P49L15

P53L31

P54L14, P54L25

P55L23

#### Style Guide 2.8.4 – unnecessary nouns (Roy)

There is no inclusion of SIFS that is followed by “time”, “spacing”,”period”,”interval”. These were all fixed in the edits between D1.0 and D2.0.

#### Style Guide 2.8.5 – unicast and multicast

Emily

50.19: change “The Ranging NDP Announcement frame shall be unicast with the RA field set to the address of the RSTA” to “The Ranging NDP Announcement frame shall be an individually addressed frame with the RA field set to the address of the RSTA”.

68.29: change “because a unicast protected management frame that uses a 6 octet PN is used to convey the LTF sequence information that carries the counter” to “because an individually addressed protected Management frame that uses a 6 octet PN is used to convey the LTF sequence information that carries the counter”.

### Style Guide 2.9 – Numbers

Jason

Page 14, Line 7, change “**320MHz positioning**” to “**320 MHz positioning**”

Page 27, Line 1, change “**320MHz**” to “**320 MHz**”

Page 27, Line 15, change “320MHz” to “320 MHz”

Page 28, Line 3, change “320MHz” to “320 MHz”

Page 28, Line 5, change “320MHz” to “320 MHz”

Page 28, Line 20, change “320MHz” to “320 MHz”

Page 32, Line 39, change “320MHz” to “320 MHz”

Page 33, Line 3, change “320MHz” to “320 MHz”

Page 33, Line 35 (first line in the second column of the table), change “320MHz” to “320 MHz”

Page 55, Line 9, change “320MHz” to “320 MHz”

31, Line 11, change “160MHz” to “160 MHz”.

Page 31, Line 16, change “160MHz” to “160 MHz”.

97, Line 5, change “40MHz” to “40 MHz”. there’s another occurrence in this figure.

Page 12, Line 23, change “40MHz” to “40 MHz”.

21, Line 12, change “12 LSBs” to “twelve LSBs”. Two occurrences.

Note-there are a lot of “12 LSBs” “4MSBs”, etc. in the baseline.

### Style Guide 2.10 – Maths operators and relations

Jason

Line 24, change “-” to “–”.

Page 44, Line 2, change “-” to “–”.

Page 46, Line 11, need to check the correctness of , perhaps it should be

### Style Guide 2.11 – Hyphenation

Edward

1) 94.22: replace “zero-power GI” with “zero power GI” so that it is consistent with the term as shown at 95.9 and the other locations.

Page 40, line 3: Change “measurement-sounding” to “measurement sounding”

### Style Guide 2.12 – References to SAP primitives

Also conformance to new clause 6 style

Joseph

There are no changes to clause 6, so there are no new clause 6 style concerns.

There are no new SAP primitives introduced, only minor modifications to existing primitives, so there are no issues with the SAP primitives clause.

There is a minor issue with the PHY-TSSTART.request primitive (page 100, line 9):

“Transmission of the PPDU shall be initiated by the PHY after receiving the PHY-TXSTART.request(TXVECTOR) primitive. The TXVECTOR elements for the PHY-TXSTART.request primitive are specified in Table 36-1 (TXVECTOR and RXVECTOR parameters).

(TXVECTOR) should not be inserted between the primitive name and “primitive” the text should read:… receiving thePHY-TXSTART.request primitive (containing TXVECTOR) …

A similar issue with the PHY-TXSTART.confirm primitive (page 100, line 19):

“then the PHY shall issue a PHY-TXSTART.confirm(TXSTATUS) primitive to the MAC, setting the TIME\_OF\_DEPARTURE parameter to the value of the time when the first frame energy is sent by the transmitting port and providing the corresponding clock rate in the TIME\_OF\_DEPARTURE\_ClockRate parameter within the TXSTATUS vector. If dot11TimingMsmtActivated is true, then the PHY shall also set the value of TX\_START\_OF\_FRAME\_OFFSET parameter in the TXSTATUS vector as described in clause 15.2.4 (TXSTATUS parmeters). **(#1354, #1355)”**

(TXSTATUS) should not be inserted between the primitive name and “primitive” between the inserted where it is the text should read: **…** issue a PHY-TXSTART.confirm primitive (containing TXSTATUS) …

### Style Guide 2.13 – References to the contents of a field/subfield (Roy)

If the field constrain only applies only to the new sections 35, 36 in 11bk, not 9 or 11.

Change subfield -> field at the following lines:

P90L13, P90L14

P91L31 x2, P91L33

P94L4 x2

### Style Guide 2.14 – MIB attributes

Mark

No issues found.

### Style Guide 2.15 – Hanging Paragraphs

Emily

No error found.

### Style Guide 2.16 – Abbreviations

Jason

No finding

### Style Guide 2.17 – Format for code/pseudocode

Volker

No comment.

### Style guide 3 – Style applicable to specific Clauses

#### Definitions (Clause 3)

Mark

Subclause 3.1 has no Editor’s instructions (it should be the standard “Change subclause 3.1 as follows”, presumably).

[Off-topic (is this Editor’s instructions/formatting stuff covered somewhere in the MDR?):

* Why does 8.3.5.15.2 have the Editor’s instruction, when it is clear from the change shown, and the overall “Change section [sic] 8.3.5…” instruction? It is confusing that the following subclauses are still covered by the overall instruction (it appears).
* Editor’s instruction in 9.3.1.19 appears incomplete (“P6L23” can’t be right).
* 9.3.1.23.1 is missing its Editor’s instruction (“Change …” presumably).
* 35.14.2 says “Insert …”, but everything is underlined. Underline is not needed.
* Annex AE is missing its Editor’s instruction (“Change …” presumably)

]

Also, since the draft is correcting the error that Null-SAC-HE-LTF did not have the abbreviations properly expanded, we should also correct that error in the definition of HE-LTF repetitions. This applies to the term being defined (“HE-LTF”) as well as many abbreviations in the definition body.

#### General Description (Clause 4)

Emily

No clause 4 in this spec.

#### Frame formats (Clause 9) – shall or may?

Volker

Page 20, line 28: Normative language “may be” is not allowed in Clause 9. Replace “may be either individual or group address.” By “is either individual or group address.”

Page 30, line 4-5: Normative language “may be” is not allowed in Clause 9. Replace “The LOS Likelihood element may be present in any FTM frame that contain TOA and TOD or Direction Measurement Results on measurements performed over DMG or EDMG PPDUs.” by “If the LOS Likelihood element is present, that FTM frame contains TOA and TOD or Direction Measurement Results on measurements performed over DMG or EDMG PPDUs.”

#### SAP interfaces (Clause 6)

JosephThere are no changes to clause 6, so there are no new clause 6 style concerns.

#### New top level clauses

EmilyNo error found.

#### Annex A – Bibliography

Not applicable

#### Annex B – PICS

Edward

1) The text change on CFPTB due to CFEHT is not underlined.

2) For EPP1, what is clause 37.3? If it means EHT PHY, it is subclause 36.3.

3) For EPP1.5, the underline on the subclause 36.3.4.1 is missing.

4) Please prepend \* to CFPASN as it is referenced by EPP1.8 and others.

5) Please prepend \* to CFPSEC as it is referenced by EPP1.8 and others.

6) Please prepend \* to CFTB as it is referenced by EPP1.8 and others.

7) Please prepend \* to CFNTB as it is referenced by EPP1.5 and others.

8) Please prepend \* to CFPTB as it is referenced by EPP1.5 and others.

9) Please define EPP in B.2.2 (General abbreviations for Item and Support columns).

#### Annex G – Frame exchange sequences

Not applicable

## ANA

Check for correct use of numbers against database.

Check names against database (update database if names have changed).

Robert Stacey

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Resource** | **Ref** | **Name** | **Value** | **Status** |
|  |  |  |  |  |

No ANA managed numbers are used in the draft. No number have been allocated to TGbk by the ANA.

Checked, found no issue with the following (list from editors deck):

Frame types and subtypes

Protocol Version subfield: 9.2.4.1.2

Frame types and subtypes: 9.2.4.1.3, Tables 9-1 and 9-2

Element ID and Element ID extension: Table 9-128

Capability Information field: 9.4.1.4

Extended Capabilities: 9.4.2.25, Table 9-190

Reason codes: 9.4.1.7, Table 9-77

Status codes: 9.4.1.9, Table 9-78

Action frame categories: 9.4.1.11, Table 9-79

Authentication algorithm: 9.4.1.1

RSNE: 9.4.2.23

Cypher suites: Table 9-186

AKM suites: Table 9-188

RSN Capabilities: Figure 9-345

RSNXE Capabilities: 9.4.2.240, Table 9-365

ANQP-element (Info ID): 9.4.5.1, Table 9-412

Neighbor Report subelements: 9.4.2.35, Table 9-210

FTE subelements: 9.4.2.46, Table 9-219

Public Action frames: 9.6.7.1, Table 9-450

WMN-Notification Types: 9.6.13.29, Table 9-516

Mesh Configuration Active Path: 9.4.2.96.2, Table 9-277

TLV encodings: 9.4.4

Operating classes: Annex E

global, USA, Europe, Japan

MIB objects: Annex C

ieee802dot11, ~~dot11smt~~, dot11phy, dot11mac, dot11StationConfigEntry, dot11OperationEntry, dot11Compliances, dot11Groups

Additional Actions:

## MIB

Yongho Seok ?

The compiled MIB is embedded as the following.

[Embed MIB after compilation]

### Detailed proposed changes

* MIB Detail

# Collateral findings

# IEEE-SA MEC

Robert to submit.

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