IEEE P802.11  
Wireless LANs

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| Some LB 249 Passive TB Ranging CR – Part III | | | | |
| Date: 2020-09-30 | | | | |
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Abstract

This document proposes resolutions to TGaz LB249 comments, for the most related to Passive TB Ranging. The changed described here are in relation to [1].

The TGaz LB249 CIDs addressed in this document are CIDs:

3052, 3053, 3874, (Re-resolving these three, previously motioned, see DCN 11/20-1020r8) and,

3557,

3656 (Re-resolving, previously motioned, see DCN 11/20-126r2),

3658,

3804,

3301, 3152, 3841, and

3310.

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed change** | **Proposed resolution** |
| 3052 | 97.28 | 9.6.7.50 | The word "Primus" and "Secundus" are new for 802.11. Do we realy need to use such new words from Latin? | Suggest to find a better word (less rare and not from Latin). Why not "First"? | Revised. Agree in principle with the commenter. TGaz editor, make the changes as shown below in document 11/20-1502. |
| 3053 | 99.03 | 9.6.7.51 | The word "Primus" and "Secundus" are new for 802.11. Do we realy need to use such new words from Latin? | Suggest to find a better word (less rare and not from Latin) Why not "Second"? | Revised. Agree in principle with the commenter. TGaz editor, make the changes as shown below in document 11/20-1502. |
| 3874 | 99.03 |  | Primus and secondus could be primary and secondary - continuing existing usage in the spec | Change as suggested | Revised. Agree in principle with the commenter. TGaz editor, make the changes as shown below in document 11/20-1502. |

**Discussion for CIDs 3052, 3053, and 3874:** The naming of these frames with “Primus” and “Secundus” seems to be controversial. We can avoid this by changing their names to “Primary” and “Secondary”.

***TGaz Editor: Change ‘Primus’ to ‘Primary’, ‘Secundus’ to ‘Secondary’, and***

***‘Secondus’ to ‘Secondary’ with the appropriate capitalizations, throughout the draft.***

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed change** | | **Proposed resolution** |
| 3557 | 113.10 | 11.22.6.1.3 | "Each of the access points operating as RSTA1, RSTA2, and RSTA3, announces the timing and bandwidth of its ranging availability window in its beacon in a RSTA Availability Window element for Passive TB Ranging. By listening to the AP's beacons, the PSTA is informed about the timing and bandwidth of the different RSTA availability windows for Passive TB Ranging. " duplicates text above | Delete the cited para | Revised. Agree in principle with the commenter. TGaz editor, make the changes as shown below in document 11/20-1502. | | |

**Discussion for CID 3557:** Reformulate the text such as to remove the duplication.

***TGaz Editor: Change the text in Subclause 11.22.6.1.3 (Passive TB Ranging overview) as follows:***

**11.22.6.1.3 Passive TB Ranging overview**

… <Scroll to P117L9>

Each of the access points operating as RSTA1, RSTA2, and RSTA3, announces the timing and bandwidth of its ranging availability window in its beacon in an RSTA Availability Window element for Passive TB Ranging. By listening to the AP’s beacons, the PSTA aquires this information for the different RSTAs’ availability windows for Passive TB Ranging. **(#3557)**

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed change** | **Proposed resolution** |
| 3656 | 127.36 | 11.22.6.3.8 | Something in Extended Capabilities is not dependent on whether the STA is an ISTA or RSTA | Change "An RSTA" to "A STA"; next para change "an RSTA" to "a STA" and "the RSTA" to "that STA" | Revised. Agree in principle with the commenter. TGaz editor, make the changes as shown below in document 11/20-1502. |

**Discussion for CID 3656:** As the commenter proposes, change the first instance of ‘An RSTA’ to ‘A STA’. However, the second paragraph deals with that an ISTA does in response to a STA that has signalled that it is an RSTA. Therefore keeping the RSTA and ISTA designations here is convenient.

***TGaz Editor: Change the text in Subclause 11.22.6.3.8 (Passive TB Ranging measurement negotiation) as follows:***

**11.22.6.3.8 Passive TB Ranging measurement negotiation**

… <Scroll to P132L22>

A STA in which dot11PassiveTBRangingResponderImplemented is true shall set the Passive TB Ranging Responder Measurement Support field in the Extended Capabilities element to 1. **(#3656)**

When an RSTA has set the Passive TB Ranging Responder Measurement Support field to 1 in the Extended Capabilities element it transmits, an ISTA with dot11PassiveTBRangingInitiatorImplemented equal to true may set the Passive TB Ranging field in the TB specific subelement in an IFTMR frame to 1 to request a Passive TB Ranging measurement session between the ISTA and the RSTA. **(#1287)**

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed change** | **Proposed resolution** |
| 3658 | 127.43 | 11.22.6.3.8 | "In Passive TB Ranging, the transmission of the ISTA Passive TB Ranging Measurement Report  frame is mandatory. Therefore, the ISTA2RSTA LMR Feedback subfield in the Ranging Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement  Request frame, and in the initial Fine Timing Measurement frame is reserved. " -- the justification is not normative | Change to "The ISTA2RSTA LMR Feedback subfield in the Ranging Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement  Request frame and in the initial Fine Timing Measurement frame is reserved.  NOTE---This is because in Passive TB Ranging, the transmission of the ISTA Passive TB Ranging Measurement Report  frame is mandatory." | Revised. TGaz editor, make the changes as shown below in document 11/20-1502. |

**Discussion to CID 3658:** It is OK to state that in Passive TB Ranging, the transmission of the ISTA Passive TB Ranging Measurement Report frame is mandatory, so no need to move that to a note. However, we can improve a little on the formulation of the text that describes that the I2R LMR Feedback subfield is reserved so we are doing that.

***TGaz Editor: Change the text in Subclause 11.22.6.3.8 (Passive TB Ranging measurement negotiation) as follows:***

**11.22.6.3.8 Passive TB Ranging measurement negotiation**

… <Scroll to P132L29>

In Passive TB Ranging, the I2R LMR Feedback is contained in the ISTA Passive TB Ranging Measurement Report frame which is transmitted mandatorily. When requesting or responding to a request for Passive TB Ranging, the I2R LMR Feedback subfield in the Ranging Parameters field of the Ranging Parameters element in the IFTMR and IFTM frames, respectively, is reserved. **(#3658)**

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed change** | **Proposed resolution** |
| 3804 | 170.11 | 11.22.6.3.8 | "alternatively in addition" -- well, is it alternatively or in addition? what "$foo report" is to be understood as meaning | Delete "and alternatively in addition" (2x) | Revised. TGaz editor, make the changes as shown below in document 11/20-1502. |

**Discussion for CID 3804:** The text is a bit convoluted. Change to hopefully more easy to read text described below.

***TGaz Editor: Change the text in Subclause 11.22.6.4.8.4 (Passive TB ranging measurement reporting phase) as follows:***

**11.22.6.4.8.4 Passive TB ranging measurement reporting phase**

… <Scroll to P176L3>

The ISTA Passive TB Ranging Measurement Report frame contains an ISTA Passive TB Ranging Measurement Report element, see Subclause 9.4.2.302 (ISTA Passive TB Ranging Measurement Report element), containing: **(#3804)**

* a Dialog Token identifying the measurement sounding phase in which the reported ISTA’s timestamps were measured,
* the CFO of the ISTA with respect to the RSTA,
* the TOD timestamp for the I2R NDP that the ISTA transmitted – labeled with the AID12/RSID12 of the ISTA,
* the TOA timestamp for the R2I NDP that the ISTA received from the RSTA, and
* optionally the TOA timestamps for the I2R NDPs received from other ISTAs participating in the Passive TB Ranging Polling-Sounding-Reporting triplet identified by the Dialog Token – labeled with their respecive AID12/RSID12s.

**(#3804)**

If phase shift TOA reporting has been negotiated, the ISTA Passive TB Ranging Measurement Report element also includes: **(#3804)**

* the PS-TOA timestamp of the R2I NDP that the ISTA received from the RSTA, and
* optionally the PS-TOAs for the I2R NDPs received from other ISTAs participating in the Passive TB Ranging Polling-Sounding-Reporting triplet identified by the Dialog Token – labeled with their respecive AID12/RSID12s.

**(#3804)**

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed change** | **Proposed resolution** |
| 3301 | 88.05 | 9.4.2.304 | Change file name 'Passive TB Ranging Measurement Table Report' to ' Passive Location LCI Table Number'. Also add description of the field in the text. | As per comment. | Revised. TGaz editor, make the changes as shown below in document 11/20-1502. |
| 3152 | 98.9 | 9.6.7.50 | "TB Ranging LCI Table Number" - this name is poor and it is not clear what is meant by "Number". Is it an index to an array of "TB Ranign LCI tables"? Is it a counter? Even after reading clause 11 it is not clear what the meaning is. | Replace number with "index", "counter" and clarify somewhere how this field used. | Revised. TGaz editor, make the changes as shown below in document 11/20-1502. |
| 3841 | 98.9 | 9.6.7.50 | "the current valid Passive TB Ranging LCI Table" -- the concept of passive TB ranging LCI tables is not defined, nor is the determination of which should be considered valid | Delete the sentence at the referenced location | Revised. TGaz editor, make the changes as shown in document 11/20-1502. |

**Discussion for CID 3301:** Propose to instead change to call it “'Passive TB Ranging Measurement Table Counter”. Also adding the missing description of the field.

**Discussion for CID 3152:** Yes, “counter” is better then “number”. Change accordingly.

**Discussion for CID 3841:** Change to refer to the “Passive TB Ranging LCI Table field” which is defined.

***TGaz Editor: Change the text in Subclause 9.4.2.304 (Passive TB Ranging LCI Table element) as follows: (I.e., remove the Passive TB Ranging Measurement Table Report field from the Passive TB Ranging LCI Table Report element.)***

**9.4.2.304 Passive TB Ranging LCI Table element**

… <scroll to P90L1>

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Element  Id | Element  Length | Element  ID  Extension |  | Number of ISTA LCI  Report  Entries | ISTA LCI Reports Entries | RSTA LCI Report (Optional) | RSTA Location Civic Report (Optional) |
| Octets: | 1 | 1 | 1 |  | 1 | Variable | Variable | Variable |

**Figure 9-1029—Passive TB Ranging LCI Table Report element (#2438, #3301)**

The Element ID, Length and Element ID Extension fields are defined in 9.4.2.1.

The number of ISTA LCI Reports contained in the ISTA LCI Reports field is indicated by the Number of ISTA LCI Reports ISTA LCI Report field. The format of the ISTA LCI Report field is defined in Figure 9-1030 (ISTA LCI Report Entry field).

***TGaz Editor: Change the text in Subclause 9.6.7.50 (Primus RSTA Broadcast Passive TB Ranging Measurement Report frame format) as follows:***

**9.6.7.50 Primus RSTA Broadcast Passive TB Ranging Measurement Report frame format**

… <Scroll to P99L23>

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Category | Public Action | Passive Location Dialog Token | Passive TB Ranging LCI Table Counter | Passive TB Ranging LCI Table Countdown Info | RSTA Passive TB Ranging Measurement Report | Passive TB Ranging LCI Table (optional) |
| Octets: | 1 | 1 | 1 | 1 | 1 | Variable | Variable |

Figure 9-981e Primus RSTA Broadcast Passive TB Ranging Measurement Report Action field format. (#3152)

The Category field is defined in 9.4.1.11 (Action field). 28

The Public Action field is defined in 9.6.7.1 (Public Action frames). (#**1693**)

… <Scroll to P100L1>

The Passive TB Ranging LCI Table Counter is a number serving as a reference to the version of the latest Passive TB Ranging LCI Table element transmitted by the RSTA transmitting the Primus RSTA Broadcast Passive TB Ranging Measurement Report frame. **(#3152, #3841)**

The Passive TB Ranging LCI Table Countdown Info field contains two subfields as shown in Figure 9-981f (Passive TB Ranging LCI Table Countdown Info field).

|  |  |  |
| --- | --- | --- |
|  | New LCI Table | Passive TB Ranging LCI Table Countdown |
| Octets: | 1 | 1 |

Figure 9-981f - Passive TB Ranging LCI Table Countdown Info field.

***TGaz Editor: Change the text in Subclause 11.22.6.4.8.4 (Passive TB ranging measurement reporting phase) as follows:***

**11.22.6.4.8.4 Passive TB Ranging measurement reporting phase**

… <Scroll to P176L22>

The Primus RSTA Broadcast Passive TB Ranging Measurement Report frame containing the following is transmitted first:

— Passive TB Ranging LCI Table Counter **(#3152)**

— Passive TB Ranging LCI Table Countdown Info

— RSTA Passive TB Ranging Measurement Report

— Passive TB Ranging LCI Table (optionally present)

Each time an RSTA transmits a Primus RSTA Broadcast Passive TB Ranging Measurement Report frame, it shall set the Passive TB Ranging LCI Table Counter value such as to refer to the latest version of the Passive TB Ranging LCI Table element transmitted by the RSTA. **(#3152)**

If a Passive TB Ranging LCI Table element *is included* in the Primus RSTA Broadcast Passive TB Ranging Measurement Report frame, and this element has *different content* as compared to the last transmitted Passive TB Ranging LCI Table element, then Passive TB Ranging LCI Table Counter shall be incremented by 1 (modula 256) from the value associated with the previous Passive TB Ranging LCI Table element content. (The first time the RSTA transmits a Passive TB Ranging LCI Table element the value shall be set to 0.) This new value of the Passive TB Ranging LCI Table Counter is now associated with this new version of the Passive TB Ranging LCI Table element. **(#3152)**

If a Passive TB Ranging LCI Table element *is included* in the Primus RSTA Broadcast Passive TB Ranging Measurement Report frame, and this element has the *same content* as the last transmitted Passive TB Ranging LCI Table element, then Passive TB Ranging LCI Table Counter value shall be the value associated with this last version of the Passive TB Ranging LCI Table element transmitted by the RSTA. **(#3152)**

If a Passive TB Ranging LCI Table element *is not included* in the Primus RSTA Broadcast Passive TB Ranging Measurement Report frame, then the Passive TB Ranging LCI Table Counter value shall be the value associated with the last version of the Passive TB Ranging LCI Table element transmitted by the RSTA. **(#3152)**

**…** <Scroll to L177P6>

When phase shift feedback is negotiated between an ISTA and an RSTA in Passive TB Ranging, the protocol for the measurement reporting phase differs from Passive TB Ranging with TOA feedback on the following points:

* The RSTA shall report its measured PS-TOA in the RSTA2ISTA LMR frame.
* The ISTA shall report its measured PS-TOA(s), in addition to its measured TOA(s), in the ISTA Passive TB Ranging Measurement Report frame.
  + The PS-TOAs are indicated as phase shift TOA time stamps by setting the Measurement Report field of the ISTA Passive TB Ranging Measurement Report element, see 9.4.2.302 (ISTA Passive TB Ranging Measurement Report element), to the value 10 (PS-TOA).
* In the Primus RSTA Broadcast Passive TB Ranging Measurement Report frame, the RSTA shall send a broadcast frame containing its measured PS-TOA, in addition to its measured TOA, for the I2R NDPs it has received from the ISTA.
* In the Secundus Primus RSTA Broadcast Passive TB Ranging Measurement Report frame the RSTA shall re-broadcast the time-stamps the ISTA has reported to the RSTA. As the ISTA has negotiated phase shift feedback, these would contain PS-TOAs in addition to TOAs.

**(#1515)**

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed change** | **Proposed resolution** |
| 3310 | 71.10 | 9.4.2.295 | Is it the case that a continuous BSS channel bandwidth, e.g. 160 MHz, can be realized with two adjacent channels driven by separate LOs? If so we may need to communicate this to the PSTAs in the Passive TB Ranging parameters subfield in the RSTA Availability Window element. | Consider if we need to communicate the use of one or two LO's by either the RSTA or the ISTA in the RSTA Availability Window element in the the Passive TB Ranging parameters subfield in the RSTA Availability Window element, and if so add this to Table 9-1000 (BW subfield for Availability Window field in the Passive TB Ranging Availability element). We need this if the PSTAs need to know this in order to properly estimate its TOAs. | Revised. TGaz editor, make the changes as shown below in document 11/20-1502. |

**Discussion for CID 3310:** The BW subfield here should really carry the same information as the Bandwidth and Format subfield in the Ranging Parameters field in the Ranging Parameters element. Therefore we propose to simply refer to that field here, and also change the name of the field from ‘BW’ to ‘Bandwidth and Format’. As the 80+80 bandwidth option only gives marginal benefits as compared to 80 MHz, and to simplify the design of PSTA’s, we disallow the 80+80 MHz bandwidth option for Passive TB Ranging.

***TGaz Editor: Change the text in Subclause 9.4.2.295 (RSTA Availability Window element) starting on P76L1 as follows:***

…

|  |  |  |
| --- | --- | --- |
|  | B0 B3 | B4 B7 |
|  | Format and Bandwidth | Reserved |
| Bits: | 6 | 2 |

**Figure 9-1005—** **Passive TB Ranging parameters subfield**

The Format and Bandwidth subfield is defined in Table 9-1001 (Format and Bandwidth subfield) and indicates the requested or allocated PPDU format and nominal bandwidth used to transmit the I2R/R2I NDP exchanged as part of the Passive TB Ranging measurement exchange in the Passive TB Ranging availability window. Depending on the medium availability, the bandwidth used for the exchanged frames is equal to or smaller than the nominal BW **(#1646, 7 #1103, #3310)**.

***TGaz Editor: Change the text in Subclause 11.22.6.3.8 (Passive TB Ranging measurement negotiation) as follows:***

…

**<Scroll to P132L41>**

When the ISTA sets the Passive TB Ranging field to 1 it shall include an unsolicited LCI Report 41 in the Fine Timing Measurement Request frame (#**1103**).

The bandwidth of 80+80 MHz is not allowed for Passive TB Ranging. **(#3310)**

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**References:**

**[1] Draft P802.11az\_D2.3**