**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Wireless Specialty Networks (WSNs) | |
| Title | **D6 PICS Correction** | |
| Date Submitted | 17 May 2022 | |
| Source | Bober, Kai Lennert Fraunhofer HHI | Voice: - Fax: - E-mail: bober@ieee.org |
| Re: |  | |
| Abstract | This document contains an updated PICS for D7 | |
| Purpose | Aid comment resolution | |
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**Legend:**

* Arial size 13 indicates subsections for individual comments
* Red underlined text needs to be adapted during the comment implementation (e.g., because it is a reference).
* Bold italic text is an instruction to the editor to implement the text

R2-59 R2-60 R2-61 R2-62 R2-63 R2-64 R2-65 R2-66

Replace term “device” with “member” in the whole document when considering a device that is a member of an OWPAN.

Remove P55L21-23

Add PHY constant to the HB-PHY:

Name: aPhyMifsDuration  
Description: the duration of the MIFS for transmissions using the PM-PHY

Value: 3 μs

Add the following after P138L17:

(item number && item number) Applies if both conditions are supported at the same time, i.e., serves as a logical and.

Replace Tables in Annex D, D3 with the following tables and update the references within the tables accordingly:

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| **Table X1 —Optional item groups** | |
| **Item** | **Item description** |
| O.PHY | At least one PHY must be supported |
| O.TYPE | At least one device type must be supported. |

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| **Table X2—Device types** | | | | |
| **Item** | **Item description** | **Reference** | **Status** | **Support** |
| DT-COO | Coordinator of an OWPAN. |  | O.TYPE |  |
| DT-MEM | Member device in an OWPAN. |  | O.TYPE |  |

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| **Table X3 — General device functions** | | | | |
| **Item** | **Item description** | **Reference** | **Status** | **Support** |
| GDF1 | Transmit an MPDU with Frame Version zero | X | M |  |
| GDF1.1 | Assign sequence numbers to outgoing MPDUs. | 6.7.1 | M |  |
| GDF2 | Receive an MPDU with Frame Version zero | X | M |  |
| GDF2.1 | Parse sequence numbers of incoming MPDUs | X | M |  |
| GDF2.2 | Filter duplicate MPDUs | 6.2.4 | M |  |
| GDF2.3 | Check MPDU FCS | 7.2.8 | M |  |
| GDF3 | Supports MD-SAP.request | X | M |  |
| GDF4 | Supports MD-SAP.indication | X | M |  |
| GDF5 | MLME interface | X | M |  |
| GDF5.1 | MLME-ASSOCIATE | 8.3.3 | DT-COO:M  DT-MEM:M |  |
| GDF5.2 | MLME-DISASSOCIATE | 8.3.4 | DT-COO:M  DT-MEM:M |  |
| GDF5.3 | MLME-GET | 8.3.5 | DT-COO:M  DT-MEM:M |  |
| GDF5.4 | MLME-SET | 8.3.6 | DT-COO:M  DT-MEM:M |  |
| GDF5.5 | MLME-SCAN | 8.3.7 | DT-MEM:M |  |
| GDF5.6 | MLME-START | 8.3.8 | DT-COO:M |  |
| GDF5.7 | MLME-STOP | 8.3.9 | DT-COO:M |  |
| GDF6 | Full duplex | X | O |  |

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| **Table X5 —MAC routines** | | | | |
| **Item number** | **Item description** | **Reference** | **Status** | **Support** |
| **OWPAN management** | | | | |
| MR-OM1 | Start and maintain an OWPAN as coordinator | X | DT-COO:M |  |
| MR-OM1.1 | Associate a new device as member | X | DT-COO:M |  |
| MR-OM1.2 | Disassociate a member | X | DT-COO:M |  |
| MR-OM1.3 | Change an attribute in a member device | X | DT-COO:M |  |
| MR-OM2 | Member of an OWPAN | X | DT-MEM:M |  |
| MR-OM2.1 | Scan for active OWPANs | X | DT-MEM:M |  |
| MR-OM2.2 | Request association from a coordinator | 6.4.6 | DT-MEM:M |  |
| MR-OM2.3 | Disassociate from an OWPAN | X | DT-MEM:M |  |
| MR-OM2.4 | Change attribute according to coordinator | X | DT-MEM:M |  |
| MR-OM2.5 | Notify the coordinator about observed interference | X | O |  |
| **Data transmission** | | | | |
| MR-DA1 | Transmit and receive a single MSDU in a data frame | X | M |  |
| MR-DA2 | Transmit and receive multiple MSDUs with the same destination and source in a data frame | X | O |  |
| MR-DA3 | Transmit and receive multiple MSDUs with different destinations and sources in a data frame | X | O |  |
| **Beacon-enabled channel access** | | | | |
| MR-BECA1 | Respect MIFS | X | M |  |
| MR-BECA2 | Support beacon-enabled channel access as coordinator | X | DT-COO:M |  |
| MR-BECA2.1 | Synchronize members | X | DT-COO:M |  |
| MR-BECA2.2 | Allocate time slices (GTS and RTS) | X | DT-COO:M |  |
| MR-BECA2.3 | Assign time slices to members | X | DT-COO:M |  |
| MR-BECA2.4 | Respect guard time when allocating TS | X | DT-COO:M |  |
| MR-BECA3 | Support beacon-enabled channel access as member | X | DT-MEM:M |  |
| MR-BECA3.1 | Synchronize to a coordinator | X | DT-MEM:M |  |
| MR-BECA3.2 | Perform random channel access | X | DT-MEM:M |  |
| MR-BECA3.3 | Transmit in assigned GTS | X | DT-MEM:M |  |
| MR-BECA3.4 | Report Queue state | X | O |  |
| **Distributed MIMO transmission** | | | | |
| MR-MIMO1 | MIMO operation | X | O |  |
| MR-MIMO2 | Transmit a single PPDU concurrently via multiple OFEs | X | (MR-MIMO1 && DT-COO):M |  |
| MR-MIMO3 | Feedback explicit MIMO CSI measured at the PHY | X | (MR-MIMO1 && DT-MEM):M |  |
| **Adaptive transmission** | | | | |
| MR-AT1 | Transmit essential elements with the PHYs base MCS | X | M |  |
| MR-AT2 | Request use of an MCS from a device | X | PL-PMPHY1:M |  |
| MR-AT3 | Request use of a BAT from a device | X | PL-HBPHY1:M |  |
| **Fragmentation** | | | | |
| MR-FRAG1 | Fragment outgoing MPDUs | X | O |  |
| MR-FRAG2 | Reassemble fragmented MPDUs | X | M |  |
| **Retransmission** | | | | |
| MR-RT1 | Retransmit an MPDU on timeout | X | M |  |
| MR-RT2 | Send and receive single ACK | X | M |  |
| MR-RT3 | Send and receive block ACK | X | O |  |
| **Relaying** | | | | |
| MR-RELAY1 | Relayed device | 6.10 | O |  |
| MR-RELAY2 | Relay device | 6.10 | O |  |
| MR-RELAY3 | Coordinator supporting relaying | 6.10 | O |  |

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| **Table X6 — MAC frames** | | | | | | |
| **Item** | **Item description** | **Reference** | **TX**  **Status** | **TX**  **Support** | **RX**  **Status** | **RX**  **Support** |
| MF-MPDU1 | MPDUs with type data | 7.3 | M |  | M |  |
| MF-MPDU2 | MPDUs with type management | 7.4 | M |  | M |  |
| MF-MPDU3 | MPDUs with type control | 7.5 | M |  | M |  |
| MF-MPDU4 | Relay Control field in the MPDU | X | MR-RELAY1:M  MR-RELAY2:M  MR-RELAY3:M |  | MR-RELAY1:M  MR-RELAY2:M  MR-RELAY3:M |  |
| MF-MPDU5 | Fragmentation Control field in the MPDU | X | MR-FRAG1:M  MR-FRAG2:M |  | MR-FRAG1:M  MR-FRAG2:M |  |
| MF-EL1 | Single MSDU element | X | M |  | M |  |
| MF-EL2 | Multiple Address Aggregated MSDU element | X | MR-DA2:M |  | MR-DA2:M |  |
| MF-EL3 | Single Address Aggregated MSDU element | X | MR-DA3:M |  | MR-DA3:M |  |
| MF-ELX | Vendor Specific element | X | O |  | O |  |
| MF-ELX | Multiple Element Container element | X | M |  | M |  |
| MF-ELX | Multiple Device Element Container element | X | M |  | M |  |
| MF-ELX | Management Procedure Container element | X | M |  | M |  |
| MF-ELX | Association Request element | X | DT-MEM:M |  | DT-COO:M |  |
| MF-ELX | Association Response element | X | DT-COO:M |  | DT-MEM:M |  |
| MF-ELX | Disassociation Notification element | X | DT-COO:M  DT-MEM:M |  | DT-COO:M  DT-MEM:M |  |
| MF-ELX | Supported MCS element | X | M |  | M |  |
| MF-ELX | Capability List element | X | M |  | M |  |
| MF-ELX | Announcement element | X | DT-COO:M |  | DT-MEM:M |  |
| MF-ELX | Attribute Change Request element | X | DT-COO:M |  | DT-MEM:M |  |
| MF-ELX | Attribute Change Response element | X | DT-MEM:M |  | DT-COO:M |  |
| MF-ELX | Alien Signal element | X | (MR-OM2.5 && DT-MEM):M |  | (MR-OM2.5 && DT-COO):M |  |
| MF-ELX | Block ACK Request Element | X | O |  | O |  |
| MF-ELX | Sync element | X | MR-BECA2.1:M |  | MR-BECA3.1:M |  |
| MF-ELX | GTS Descriptor List elements | X | MR-BECA2.3:M |  | MR-BECA3:M |  |
| MF-ELX | GTS Descriptor element | X | MR-BECA2.3:M |  | MR-BECA3:M |  |
| MF-ELX | RTS Descriptor | X | MR-BECA2.3:M |  | MR-BECA3:M |  |
| MF-ELX | MCS Request element | X | MR-AT2:M |  | MR-AT2:M |  |
| MF-ELX | BAT Request element | X | MR-AT3:M |  | MR-AT3:M |  |
| MF-ELX | PM-PHY MCS element | X | (MR-AT2 && PL-PMPHY1):M |  | PL-PMPHY1:M |  |
| MF-ELX | HB-PHY MCS element | X | PL-HBPHY1:M |  | PL-HBPHY1:M |  |
| MF-ELX | Explicit MIMO Feedback element | X | MR-MIMO2:M |  | O |  |
| MF-ELX | Reachable Address element | X | MR-RELAY1:M  MR-RELAY3:M |  | MR-RELAY2:M |  |
| MF-ELX | Relay Device Configuration Request element | X | MR-RELAY1:M |  | MR-RELAY1:M |  |
| MF-ELX | Relay Device Configuration Response element | X | MR-RELAY1:M |  | MR-RELAY1:M |  |
| MF-ELX | Relayed Device Configuration Request element | X | MR-RELAY1:M |  | MR-RELAY1:M |  |
| MF-ELX | Relayed Device Configuration Response element | X | MR-RELAY1:M |  | MR-RELAY1:M |  |

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| **Table X7—Physical layers** | | | | |
| **Item** | **Item description** | **Reference** | **Status** | **Support** |
| **PM-PHY** | | | | |
| PL-PMPHY1 | PM-PHY is supported | 10 | O.PHY |  |
| PL-PMPHY1.1 | PM-PHY MIMO Pilots | 10.2.6 | O |  |
| PL-PMPHY1.2 | 12.5 MHz rate | 10.2.8 | PL-PMPHY1:M |  |
| PL-PMPHY1.4 | 25 MHz rate | 10.2.8 | O |  |
| PL-PMPHY1.5 | 50 MHz rate | 10.2.8 | O |  |
| PL-PMPHY1.6 | 100 MHz rate | 10.2.8 | O |  |
| PL-PMPHY1.7 | 200 MHz rate | 10.2.8 | O |  |
| **HB-PHY** | | | | |
| PL-HBPHY1 | HB-PHY is supported | 11 | O.PHY |  |
| PL-HBPHY1.1 | 50 MHz bandwidth | 11 | PL-HBPHY1:M |  |
| PL-HBPHY1.1 | 100 MHz bandwidth | 11 | O |  |
| PL-HBPHY1.1 | 200 MHz bandwidth | 11 | O |  |