**IEEE P802.15**

**Wireless Specialty Networks**

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| Project | IEEE P802.15 Working Group for Wireless Specialty Networks (WSNs) | |
| Title | CID 1401: SIFS and LIFS for HRP-EMDEV | |
| Date Submitted | 11 February 2025 | |
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| Re: | LB207, CID 1401 on P802.15.4ab-D01 | |
| Abstract | Proposed resolutions to CID 1401 | |
| Purpose | Resolve the specific initial WG ballot (LB207) comment ID 1401 | |
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# Introduction

This document addresses the following comment:

Comments:

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| --- | --- | --- | --- | --- | --- |
| **CID** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** |
| 1401 | 15 | 6.6.3.3 | 24-26 | Fixing AIFS, but leaving SIFS, LIFS unchanged as 12 and 40 preamble symbols seems to be conflicting with the base standard requiring AIFS<SIFS<LIFS. | Add definitions for SIFS and LIFS for HRP-EMDEV with adequate values. |

# Resolutions

Add change to 11.1.4 (802.15.4-2024), second group, as indicated:

For the HRP UWB PHY, except for an HRP-EMDEV, the minimum LIFS period and SIFS period are as follows:

— macLifsPeriod: 40 preamble symbols

— macSifsPeriod: 12 preamble symbols

For an HRP-EMDEV the minimum LIFS period and SIFS period are as follows:

— macLifsPeriod: Value of macEmdevImmAckAifsPeriod + 28 preamble symbols

— macSifsPeriod: Value of macEmdevImmAckAifsPeriod

# Discussion

The comment correctly observes that for some PHY configurations LIFS as specified in the base standard can be less than the AIFS specified in 802.15.4ab-D1 draft for HRP-EMDEVs (~40µs). This violates the constraint stated in the base standard that AIFS ≤ SIFS < LIFS [802.15.4-2024, 6.3.1].

With the addition of the attribute *macEmdevImmAckAifsPeriod* the value of AIFS when operating as a HRP-EMDEV can be 16, 32 or 64 µs. AIFS specifies the *maximum* time allowed for generating the Imm-Ack following reception of a frame with the Acknowledgment request (AR) field set. In the base standard, the Imm-Ack response time AIFS is related to the short interframe spacing (SIFS) and long interframe spacing (SIFS). The exact reason for this is obscured by the passage of time. LIFS and SIFS are minimum interframe spacings, following a long or short frame, respectively. Actual interframe spacings (the time between subsequent transmissions from a given transmitting device) may be greater. The present specification for SIFS is 12 preamble symbol durations [802.15.4-2024 11.1.4]. The preamble symbol durations vary based on PHY configuration.

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| --- | --- | --- | --- | --- |
| Psym Duration |  | 993.59 nanosec | 1017.63 nanosec | 3974.36 nanosec |
|  | #sym |  |  |  |
| LIFS | 12 | 11.923 | 12.212 | 47.692 |
| SIFS µs | 40 | 39.744 | 40.705 | 158.974 |

Thus combinations of AIFS, LIFS and SIFS may violate the constraint. By setting LIFS to the currently selected AIFS and LIFS to a value greater than this, we assure that AIFS ≤ SIFS < LIFS, the LIFS period needs to be greater than AIFS and SIFS.

This maintains the relationship between AIFS, LIFS and SIFS as defined in the base standard.