**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | Proposed Resolutions for TG4m Initial Sponsor Ballot MAC Ranging Related Comment  |
| Date Submitted | October 1, 2013 |
| Source | Benjamin A. RolfeBlind Creek AssociatesKunal ShahSilver Spring NetworksCristina SeibertSilver Spring Networks | E-mail: ben @ blindcreek.comE-mail: kshah @ silverspringnet.com E-mail: cseibert @ silverspringnet.com  |
| Re: | Comment Resolution, Sponsor Ballot, 802.15.4m |
| Abstract | Contains proposed changes to d3P802.15.4m\_Draft\_Standard to resolve comments related to the MAC Ranging text: 115, 105, 106, 107, 108, 109, 110, 112, 113, 114, 115, 165, 166, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220 |
| Purpose | Resolve Comments |
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5.1.8.4 The ranging exchange

*Change last paragraph:*

For the UWB PHY, in all of these timestamp reports, the timestamp itself shall consist of the 12 octets defined for the timestamp report in 14.7.1, 14.7.2, and 14.7.3. Use of nonzero timestamp reports is limited to RDEVs. Only devices that have phyRanging set to TRUE shall return a nonzero timestamp report to a next higher layer.

For TVWS RDEVs, the Timing IE and Ranging Information IE are provided for exchanging ranging information between TVWS RDEVs.

*Remove 5.1.8.5.*

6.3.2 MCPS-DATA.confirm

*Change Description field of RangingCounterStart in Table 47 as follows:*

A count of the time units corresponding to an RMARKER at the antenna at the beginning of a ranging exchange, as described in 14.7.1 for the UWB PHY, and Annex S for TVWS PHYs. For TVWS PHYs, counter units are nanoseconds. A value of 0x00000000 is used if ranging is not supported, not enabled or if counter was not used for this PPDU.

*Change Description field of RangingCounterStop in Table 47 as follows:*

A count of the time units corresponding to an RMARKER at the antenna at the end of a ranging exchange, as described in 14.7.1 for the UWB PHY, and Annex S for TVWS PHYs. For TVWS PHYs, counter units are nanoseconds. A value of 0x00000000 is used if ranging is not supported, not enabled, or if the counter is not used for this PPDU.

5.1.6.4.2 Acknowledgment

*Insert at the end of sub-clause:*

For TVWS RDEVs, the Enhanced Acknowledgement shall include the Ranging Information IE as defined in [5.2.4.34.2] if the RNG field of the PHR is set to 1 in the frame being acknowledged.

5.2.4.34.1 Timing IE

*Replace text with:*

The Transmit Timestamp field shall be set to the time, in nanoseconds, in the transmitter time reference at the antenna, when the packet containing this IE is transmitted. The timing reference is as given in *macSyncSymbolOffset* [table 52 6.4]. The timestamp value shall be updated at transmission of the packet.

The Timing IE is encoded as shown in Figure 48nac.

|  |
| --- |
| Octets: 4 |
| Transmit Timestamp |

Figure 48nac Timing IE Content

5.2.4.34.2 Ranging ~~response~~ Information IE

*Replace text with:*

The Ranging Information IE is encoded as shown in Figure 48nad.

|  |
| --- |
| Octets: 4 |
| RX TX Time Difference |

Figure 48nad Ranging Information IE Content

The RX TX Time Difference field contains the difference in time, in nanoseconds, at the device generating this IE, from the time the frame containing the IE is transmitted to the time a RFRAME was received. The reference for these time values is given by *macSyncSymbolOffset*.

This IE shall be generated and included in the acknowledgement when an RFRAME is received by a TVWS RDEV with the AR field of the MHR set to 1.

5.2.4.5 MLME information elements

*Replace row for “Ranging Request IE” in Table 4d with the following:*

Sub-ID Value: 0x34

Content Length: 4

Name: Timing IE

Description: TX timestamp information as described in 5.2.4.34.1

*Replace row for “Ranging Response IE” in Table 4d with the following:*

Sub-ID Value: 0x35

Content Length: 4

Name: Ranging Information IE

Description: Timing difference for ranging support, as described in 5.2.4.34.2

*Remove sub-clause 6.3.1 from 802.15.4m.*

*Remove UseRangingIE field from 6.3.3.*