**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 comment resolution for CID #235 of LB104** | |
| Date Submitted | 19 June 2015 | |
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| Re: | 802.15.10 Consolidated Comment Entry Form, CID #235 | |
| Abstract | Provides a proposed resolution to CID #235 | |
| Purpose | To be used by the technical editor to apply the necessary changes to the draft to resolve CID #235 | |
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**Comment CID #235**

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| **Commenter** | **Page** | **Clause** | **Line** | **Comment** | **Proposed change** |
| Don Sturek | 27 | 5.2.3.1 | 38 | Brother routing requires some attention to loop avoidance. I don't see any usable loop avoidance procedure in the text. Even if something simple like a Time to Live is used, there would need to be some indication back to the sender that the routing failed (which also seems impossible). | First, at least for Brother routing, provide explicit text describing Loop Avoidance. Next, in conjunction with error handling around Loop Avoidance, describe how the sender is notified of the routing failure. |

**Resolution: AiP**

* ***Insert the following text at the end of the last paragraph of clause 5.2.3.1***

A device should use brother routing only if it has the necessary resources to inforce the loop avoidance mechanism described in 5.4.1.2.

* ***Modify the third paragraph of p.36 as follows:***

Each device keeps a list of used neighbors for a given SN and SA. This list contains the addresses of the devices which it has received a frame from or it has forwarded a frame to. When a device selects a next hop, neighbors whose addresses are recorded in this list should not be considered in order to avoid loops. This list is deleted after an *l2rSNSARecordTimeout*. If brother routing is enabled, a device should have the necessary resources to enforce this loop avoidance mechanism.

* ***Insert the following clause after clause 5.4.1.3***

**5.4.1.4. End to end acknowledgement**

A source device may request the final destination to transmit an E2E ACK IE upon receiving a frame by setting the E2E AR field of the L2R Routing IE to one.

A source device that sends a frame with the E2E AR field set to zero in the L2R Routing IE assumes that the frame has been successfully transmitted to the final destination.

A source device that sends a frame with the E2E AR field set to one in the L2R Routing IE waits for the final destination to respond with an E2E ACK IE. If the E2E ACK IE is received within the expected time with a SN corresponding to the SN of the original L2R Routing IE, the transmission is considered successful. If the E2E ACK IE is not received during the expected time or contains a SN that does not correspond to the SN of the original L2R Routing IE, the source device concludes that the transmission has failed. The expected time to receive an E2E ACK IE depends on the various parameters in an implementation such as the network size or the existence of duty cycling devices and is out of the scope of this document.

* ***Modify the third paragraph of clause 7.2.1 as follows:***

Figure 67 illustrates the use of the data service primitives in a successful end-to-end transmission. If the frame requires an E2E ACK IE, indicated by the E2E AR parameter of the L2R-DATA.request primitive set to TRUE, the L2R sublayer sends the L2R-DATA.confirm with the status SUCCESS if the E2E ACK IE is received within the expected time with a SN corresponding to the SN of the original L2R Routing IE. If the E2E ACK IE is not received within the expected time or if it is received with a SN that does not correspond to the SN of the original L2R Routing IE, the L2R sublayer sends the L2R-DATA.confirm with the status NO\_E2E\_ACK or E2E\_ACK\_INVALID\_SN respectively.

* ***Add “NO\_E2E\_ACK” and “E2E\_ACK\_INVALID\_SN” in the valid range of the Status in Table 32***
* ***Insert the following text at the end of clause 7.2.1.2***

If the data frame required an E2E ACK IE and no E2E ACK IE has been received within the expected time, the Status is set to NO\_E2E\_ACK.

If an E2E ACK IE is received with a LSN that does not match that of any data frame previously transmitted, the Status is set to E2E\_ACK\_INVALID\_SN.