**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:***

If brother routing is enabled in a mesh tree, 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.

**Regarding routing failure**

* Currently not addressed

There are two cases:

* Data frames requiring an E2E ACK IE: in this case, a routing error would be known from the absence of E2E ACK
* Data frames not requiring an E2E ACK IE
  + Option 1: not addressed if we assume that devices are able to handle loop avoidance when brother routing is used. If brother routing is not used, there shouldn’t be any loop if the topology is stable. No change in the spec
  + Option 2: addressed
    - 🡺 creation of a No Route IE
    - The No Route IE would be called if:
      * The number of retry allowed has reached 0
      * A frame of low priority (as indicated by the Guaranteed transmission and the Delay Critical flags) is dropped
      * A frame of the same sequence number from the same source address is received, indicating a loop
      * Any other cases?
    - Each device would need to record the SN, SA and the address of the neighbor which the original frame was received from, for a “certain” period of time in case a No Route IE needs to be transmitted to the original source through the reverse path.
    - The SN of the No Route IE should match the SN of the corresponding L2R Routing IE.
    - The No Route IE should be sent with a L2R Routing IE on the reverse path. In this case the SA of the L2R Routing IE is the address of the device that has detected the failure. The DA is the address of the original source of the frame that couldn’t be transmitted. The SN is set based on the counter of the neighbor detecting the failure.
    - Anything else?