**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 Routing related comments of LB104** | |
| Date Submitted | 27 July 2015 | |
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| Re: | 802.15.10 Consolidated Comment Entry Form, Routing related comments | |
| Abstract | Provides a proposed resolution to Routing related comments | |
| Purpose | To be used by the technical editor to apply the necessary changes to the draft to resolve Routing related comments | |
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1. **Comment CID R97**

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| **Commenter** | **Page** | **Clause** | **Line** | **Comment** | **Proposed change** |
| Charlie Perkins | 26 | 5.2.3.1 | 52 | "If a device has several ancestors available" -including parents? | Explain, or modify definition of ancestor |

**Resolution:**

* ***Modify the definition of ancestor as follows:***

**ancestor:** A device with at least a depth less than the current device.

1. **Comment CID R98**

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| **Commenter** | **Page** | **Clause** | **Line** | **Comment** | **Proposed change** |
| Charlie Perkins | 27 | 5.2.3.1 | 25 | Don't understand Figure 12; 7>LQT but also 5>LQT | Explain how to choose between two nonconformant links. |

**Resolution**

* ***Replace Figure 11 with:***



* ***Modify clause 5.2.3.1 as follows:***

When hop-by-hop routing is used, each device selects the next hop from its NT based on the metric(s) without the knowledge of the entire path to the mesh root. US routing requires at least one parent in the NT. If brother routing is enabled, a device may route a frame US through a brother. The use of brother routing is indicated by the Brother Routing field in the Descriptor field of the TC IE.

If a device has several ancestors available, the frame is forwarded through the ancestor providing the lowest depth, the best PQM. If the LQM of this ancestor does not satisfy the LQT, the frame is forwarded through the ancestor with next lowest depth with the best PQM whose LQM satisfies the LQT. If no ancestor satisfies the LQT, the ancestor with the best LQM is selected. The LQT is defined by the mesh root and is indicated by the Threshold field in the PQM field of the TC IE. If the Threshold field is not present, the frames are routed through the ancestor with the lowest depth. This results in the shortest path.

Figure 12 shows an example of US route establishment between F and R assuming that the smaller the PQM value, the better the path to the mesh root. The dashed arrow shows the path when the LQT is not set. The dashed and dotted arrows represent the US route when the LQT is set to 3.



Figure 12—US route establishment

If brother routing is enabled and if the LQM offered by the best ancestor does not satisfy the LQT, the packet is routed through the best brother. If the LQM offered by the best brother does not satisfy the LQT, the packet is routed through the device with the best metric between the best ancestor and the best brother. The use of brother routing is indicated by the Brother Routing field in the L2R-D IE. Figure 13 shows an example of US route establishment between F and R when the LQT is set to 3. The dashed arrows represent the path when brother routing is disabled whereas the plain arrows represent the path when brother routing is enabled. 

1. **Comment CID R106**

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| **Commenter** | **Page** | **Clause** | **Line** | **Comment** | **Proposed change** |
| Charlie Perkins | 36 | 5.4.1.2 | 25 | "until the first common ancestor" | Specify how this is determined |

**Resolution**

* ***Modify the third paragraph of clause 5.4.1.2 as follows:***

If on-demand P2P routing is allowed in the L2R mesh tree, a source device may establish a route to the destination through the procedure described in 5.2.6. If the route is established, the next hop is selected according to the newly found path. If no route is found within *l2rP2pRouteDiscoveryTimeout*, the frame is forwarded US until a device finds a DS path to the destination in its NT. The next hop is selected according to the algorithm illustrated in Figure 18.