**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | **/ Technical Guidance Document** | |
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| Re: | [TG10 TGD] | |
| Abstract | [Working document] | |
| Purpose | [see Re:] | |
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1. Overview
2. Definitions
3. Abbreviation and acronyms
4. General requirements
   1. Summary of PAR
   2. High level requirements overview
   3. Application requirements matrix
5. Functional requirements
   1. Mesh Topology Discovery

The proposal shall enable automatic topology learning, including the status and quality of links between devices.

* 1. Mesh Routing Protocol

MAC address-based protocol and algorithm shall be defined for dynamic auto-configuration of MAC-layer data delivery paths between devices in L2R network. Which path between devices should be established is up to network topology.

* 1. Extensible Mesh Routing Architecture

The proposal shall define protocol architecture to allow for alternative path selection metrics and/or routing protocols based on application requirements so that each device can detect which alternatives can be used or which alternative is currently used by other devices.

* 1. Mesh Broadcast Data Delivery

The proposal shall enable MAC-layer broadcast/multicast data delivery across the L2R network.

* 1. Mesh Unicast Data Delivery

The proposal shall enable MAC-layer unicast data delivery across the L2R network.

* 1. Mesh Network Size

The proposal shall support 1000-10000 devices in the L2R network.

* 1. Mesh Security
  2. Radio-Aware Routing Metrics

At least one radio-aware routing metric shall be defined for use by the routing protocol(s).

* 1. Discovery and Association with a L2R network

The proposal shall support the discovery of and association with a L2R network by devices.

* 1. Amendment to MAC with no PHY changes required

The proposal shall not require modification to the 802.15.4 physical layer.

1. Performance requirements
   1. Required memory resource.
   2. Calculation cost
   3. Energy consumption
   4. Control traffic overhead
   5. Route acquisition time
   6. Recovery time of link failure
   7. Scalability to network size
   8. End to End packet loss rate
   9. End to End data throughput and delay
   10. Life time of battery operated network
2. Regulations
3. Evaluation methodology