**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | **Performance metrics for proposal evaluation** | |
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| Re: |  | |
| Abstract | This document present a proposal on the performance metrics to be used to compare the proposals to TG10 | |
| Purpose | The proposed performance will be used for proposal comparison | |
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**Introduction**

This document suggests a list of performance metrics to be presented in the simulation results. These metrics will be used to evaluate and compare the different proposals. Additional performance metrics may be added if agreed by the group

**Performance metrics of Proposals**

1. Metrics Based on Proposals – need to be stated as part of results

* Average Construction (for reactive routing protocols) or Initialization (for pro-active routing protocols) overhead during whole simulation time
  + Overhead to needed to form upward routes (Hello packets, etc.)
  + Overhead needed to form downward routes (Hello packets, etc.)
  + Describe procedures in a quantified manner (# packets, # bytes, etc.)
* Average Routing overhead during whole simulation
  + Just forward packet or is probing of next hop needed
* What else in addition to 15.4 MAC is needed to transfer packet end-to-end
  + IE’s, Header
* Recovery/Re-Discovery overhead for drop routes (nodes) to reroute after outage occurs and after outage subsides
  + Describe Route Updating and Re-Routing Procedure for
    - Recovery as a result of outage
    - Re-Discovery as a result of outage subsiding
* Type of network simulation/analysis was done for
  + What kind of MAC is used
  + Beacon or non-beacon enable mode
    - Beacon Order and Superframe Order values
    - How is it applicable to other mode
* Type of node deployment (positioning)
  + Random or Equally Spaced (Grid)

1. Metrics Based on Simulation Results/Analysis of Proposals

* End to end successful transmission ratio - Packet Delivery Ratio (PDR)
* End to end transmission delay/latency (Min., Max., Avg.) - the time elapsed from when a data packet is first sent to when it is first received at its destination
* 99.99th Percentile Latency - Computed as the 99.99th percentile of the packet delivery latency
* Number of hops (Max., Avg.)
* Battery consumption in 24 hours in duty cycling and non-duty cycling mode
  + Min., Max., Avg. for
    - * PAN Coordinator
      * Router
      * End Device