**IEEE P802.15**

**Wireless Specialty Networks**

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| Project | IEEE P802.15 Working Group for Wireless Specialty Networks (WSNs) – 802.15.6ma | |
| Title | **Proposed text for 6ma MAC – General framework elements** | |
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| Re: | Contribution to IEEE 802.15.6ma | |
| Abstract | This document provides a text draft of 6ma MAC for terms definitions in clause 3 and for overview of coexisting dependable BANs in clause 4. | |
| Purpose | Support development of technical content for the draft | |
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***Revise the sub-clause 3.1 and 3.3 as follows:***

**3. Definitions, acronyms, and abbreviations**

For the purposes of this document, the following terms and definitions apply. The IEEE Standards Dictionary: Glossary of Terms & Definitions [B1] should be consulted for terms not defined in this clause.7, 8

**3.1 Definitions**

**beacon access phase (BAP)**: A time span set aside by a coordinator hub of a dependable BAN group in a beacon period (superframe) for broadcasting beacons of hubs joined a dependable BAN group.

**coordinator hub**: A hub of a dependable BAN group that coordinates hubs joined a dependable BAN group.

**dependable BAN**: A body area network (BAN) that operates in beacon mode with superframes over IR-UWB PHY and guarantees low latency, low jitter, and high update cycle for the time critical medical services of human BAN (H-BAN) and/or for the feedback loop control services of vehicle BAN (V-BAN).

**dependable BAN group**: A group of dependable BANs that are located within interfering range and coordinate each other to coexist.

**leaf hub**: A hub of a dependable BAN group that joins a dependable BAN group as a member.

**3.2 Special terms**

**3.3 Acronyms and abbreviations**

BAP Beacon Access Phase

***Revise the sub-clause 4.1 and 4.2 as follows:***

**4.1 General**

This clause provides the basic framework of nodes and hubs. The framework serves as a prerequisite to supporting the functions of nodes and hubs and their interactions specified later in detail. It covers the following aspects: the network topology used for medium access, the reference model used for functional partitioning, the time base used for access scheduling, the state diagrams used for frame exchange, ~~and~~ the security paradigm used for message protection, and the coexisting dependable BANs.

**4.2 Network topology**

All nodes and hubs are to be organized into logical sets, referred to as body area networks (BANs) in this specification, and coordinated by their respective hubs for medium access and power management as illustrated in Figure 1. There is to be one and only one hub in a BAN, whereas the number of nodes in a BAN is to range from zero to mMaxBANSize. In a one-hop star BAN, frame exchanges are to occur directly between nodes and the hub of the BAN. In a two-hop extended star BAN, the hub and a node are to exchange frames optionally via a relay-capable node.

~~Access coordination at the MAC sublayer between BANs is not specified in this standard.~~ Optional mechanisms for coexistence and interference mitigating between adjacent or overlapping BANs are provided (in 6.13). Nodes referenced in this standard are in the context of a given BAN, unless noted otherwise.

***Insert the sub-clause 4.7 as follows:***

**4.7 Coexisting dependable BANs**

The dependable BAN shall operate in beacon mode with superframes over IR-UWB PHY. The dependable BAN provides reliable connection guaranteeing low latency, low jitter, and high update rate for the time critical medical services of human BAN (H-BAN) such as automatic remote sensing glucose and controlling insulin pump for diabetes patients or for the feedback loop control services of vehicle BAN (V-BAN) such as collision avoidance radar and automatic braking.

According to the grades of dependability, the dependable BAN may have three classes:

- class 1 dependable BAN guarantees 15 ms bounded latency, 99.9% probability of loss, 10ms update rate

- class 2 dependable BAN guarantees 100 ms bounded latency, 99% probability of loss, 50ms update rate

- class 3 dependable BAN guarantees 250 ms bounded latency, 95% probability of loss, 1s update rate

A dependable BAN may exist other dependable BANs within interfering range. For coexisting multiple dependable BANs, a dependable BAN coordinates other dependable BANs to avoid interference or to mitigate interference by forming a dependable BAN group.

A hub of a dependable BAN may become a coordinator hub that maintains a group of dependable BANs within interfering range or a leaf hub that follows the management of the coordinator. The procedure for selecting the role of a hub and the procedure for creating and maintaining a dependable BAN group are described in 6.4.4.

A hub of a dependable BANs group communicates other hubs of a dependable BANs though a beacon slot in Beacon Access Phase (BAP) as describe in 6.3.1.

For mitigating interference among coexisting dependable BANs, a dependable BAN regulates the access channel as described in 6.13.4.