IEEE Std. 802.15.4

Data study for medical usage

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Areas of study

- Data rates available
- Timing constraints
- Coexistence environment

Categories for Data Rates

Physical Medium Dependent (PMD) - 868 MHz - 902 MHz -2450 MHz WPAN type

- Unslotted
- Slotted

Traffic type

- asymmetric
- symmetric

Packet delivery service - acknowledged -unacknowledged

Subcategories for Slotted WPAN

- Guaranteed Time Slots
- Beacon Order
- Superframe Order

IEEE 802.15.4 Service Data Rates

See separate file with tables

Simulation Progress

- Modeled 802.15.4 Medium Access Control (MAC) and Physical layer (2450 MHz) protocol for Carrier Sensed Multiple Access with Collision Avoidance (CSMA/CA) in an Unslotted WPAN
- Examining RF models
- Generating traffic models
- Generating user/usage scenarios

Sample Medical Data Rates

Data type	Sampling information	Compression ratio	Bit rate
Video	256 x 256 pel/plane 8-bit RGB/pel 1plane/20 s	10:1	8 kbit/s
Audio	8 bit/sample 6000 sample/s	4.8:1	10 kbit/s
ECG	3 channel 8 bit/sample 200 sample/s	8:1	600 bit/s
Blood pressure	16 bit/sample 1 sample/minute	1:1	0.3 bit/s

Koichi Shimizu, "Telemedicine by Mobile Communication," IEEE Engineering in Medicine and Biology, July/August 1999

Questions

- What types of applications?
- What are the traffic characteristics?
 - packet/frame size
 - arrival rate
 - timing constraints
- What types of wireless technology?

Scenarios

- how many devices?
- Point to point / multipoint
- Prioritize application selection