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## Abstract

The wireless body area network (WBAN) is a wireless network used for communication among sensor nodes operating on, in or around the human body in order to monitor vital body parameters and movements. The pursuit of higher quality of life motivates people to be more concerned about their health and potential diseases. At the same time, many patients can benefit from continuous monitoring of their diagnostic procedures. All these require a convenient healthcare surveillance system to monitor people's health status anytime anywhere, especially when people suffer an acute event, such as a sudden heart attack. The tracking capability of such a system should also be able to provide optimal maintenance after a

surgical procedure and support early detection of abnormal health conditions. This project investigates the efficient design of the PHY layer architecture for wireless body area networks (WBAN), which targets on ultra-low power consumption with reliable quality of service (QoS). A low cost baseband transceiver specification and a data processing flow are proposed with a comparatively low-complexity control state machine. A multifunctional digital timing synchronization scheme is also proposed, which can achieve packet synchronization and data recovery.

## References

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- R. Schmidt, T. Nörgall, J. Morsdorf, J. Bernhard, and T. Grün, "Body area network BAN, a key infrastructure element for patient-centered medical applications," *Biomed. Eng.*, vol. 47, pp. 365–368, 2002.
- G. Z. Yang, *Body Sensor Networks*. New York: Springer, 2006
- B. Lo, S. Thiemjarus, R. King, and G. Yang, "Body sensor network—A wireless sensor platform for pervasive healthcare monitoring," in *Proc. 3rd Int. Conf. Pervasive Comput.*, 2005, pp. 77–80.
- J. Pansiot, R. C. King, D. G. McIlwraith, B. P. L. Lo, and G. Z. Yang, "ClimBSN: Climber performance monitoring with BSN," in *Proc. IEEE 5th Int. Workshop Wearable Implantable Body Sensor Netw.*, Jun. 2008, pp. 33–36.
- Texas Instruments, Dallas, TX, "Texas Instruments CC2420 preliminary datasheet (rev 1.4)," 2006.
- C. C. Wang, C. C. Huang, J. M. Huang, C. Y. Chang, and C. P. Li, "ZigBee 868/915-MHz modulator/demodulator for wireless personal area network," *IEEE Trans. Very Large Scale Integr. (VLSI) Syst.*, vol. 16, no. 7, pp. 936–939, Jul. 2008.
- C. C. Wang, J. M. Huang, L. H. Lee, S. H. Wang, and C. P. Li, "A low-power 2.45 GHz ZigBee transceiver for wearable personal medical devices in WPAN," in *Proc. IEEE Int. Conf. Consumer Electron. (ICCE)*, Jan. 2007, pp. 1–2.
- S. J. Song, N. Cho, S. Kim, J. Yoo, S. Choi, and H. J. Yoo, "A 0.9 V 2.6 mW body-coupled scalable PHY transceiver for body sensor applications," in *IEEE Int. Solid-State Circuits Conf. Dig. Tech. Papers*, 2007, pp. 366–367.
- H. H. Ma, J. Y. Yu, T. W. Chen, C. Y. Yu, and C. Y. Lee, "An OFDMA based wireless body area network using frequency pre-calibration," in *Proc. IEEE Int. Symp. VLSI Des., Autom. Test (VLSI-DAT)*, Apr. 2008, pp. 192–195.
- J. Y. Yu, C. Y. Yu, S. B. Huang, T. W. Chen, J. T. Chen, K. L. Kuo, and C. Y. Lee, "A 0.5 V 4.85 Mbps dual-mode baseband transceiver with extended frequency calibration for biotelemetry applications," in *Proc. IEEE Asian Solid-State Circuits Conf.*, 2008, pp. 293–296.
- Helia Naeimi, André DeHon, "Fault Secure Encoder and Decoder for NanoMemory Applications," *Vol. 17, no. 4, April 2009*
- Xin Liu, Yuanjin Zheng, Member, IEEE, Bin Zhao, Yisheng Wang, and Myint Wai Phyu, "An Ultra Low Power Baseband Transceiver IC for Wireless Body Area Network in 0.18- $\mu\text{m}$  CMOS Technology," *Vol. 19, no. 8, August 2011*

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