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(57) Abstract :
The present invention relates to a system for low-power ultrawide band communication devices, comprising a transceiver unit (101), power management module (102), digital signal processor (103), antenna system (104), and adaptive control circuitry (105). The invention reduces energy consumption by integrating dynamic power regulation, low-noise amplification, and optimized digital signal processing. Experimental validation demonstrates enhanced communication reliability, improved energy efficiency, and scalability, making the system suitable for IoT devices, biomedical applications, and next-generation communication networks. The system ensures long-lasting performance, compact design, and robust wireless connectivity.

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