

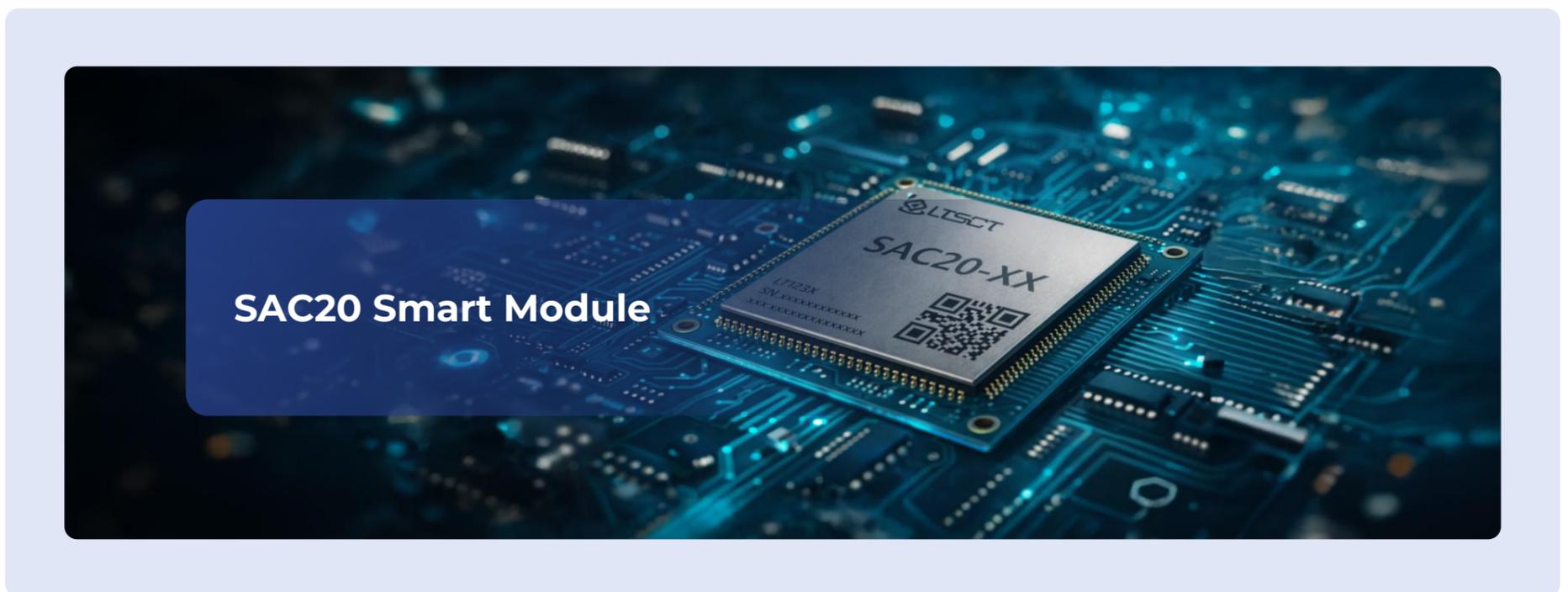


# Mastering Low-Power States

## Optimizing Battery Life on the LTSCCT SAC20

Battery life is no longer a secondary design metric it is a core differentiator for connected products. From industrial handhelds and smart kiosks to asset trackers and POS terminals, customers and developers alike expect **longer uptime, lower maintenance, and predictable power behaviour** under real-world operating conditions.

The **LTSCCT SAC20 Smart Module** is designed with these expectations in mind. By combining advanced low-power hardware states with flexible software control, SAC20 enables system designers to significantly extend battery life without compromising performance or connectivity.



### Why Low-Power State Management Matters

For Customers, efficient power management translates directly into:

- 
Reduced field maintenance and battery replacement costs
- 
Higher device availability and reliability
- 
Lower total cost of ownership (TCO)

For developers, it means:



Greater control over system-level power behaviour



The ability to align power consumption with application workloads



Easier compliance with stringent energy and thermal budgets

Low-power optimization is therefore both a **commercial advantage** and a **technical necessity**.

At the heart of SAC20's efficiency is a multi-layered power architecture that supports granular control across the modem, application processor, peripherals, and external interfaces.

**Key characteristics include:**

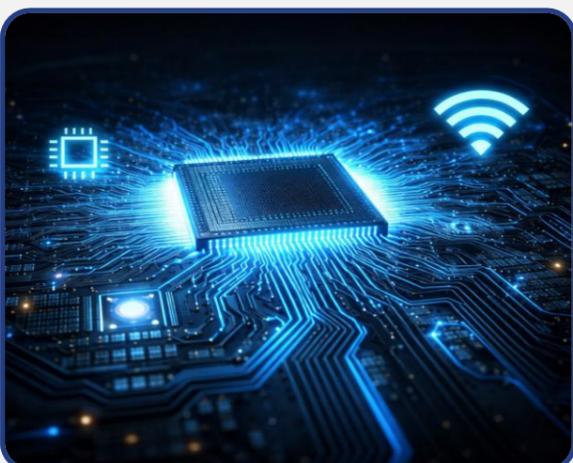
- ✓ Independent power domains for compute, RF, and I/O
- ✓ Fast transitions between active and sleep states
- ✓ Support for application-driven and event-driven wake-up

This architecture allows designers to tailor power behaviour precisely to their use case.

## Understanding SAC20 Low-Power States

### 1. Active Mode

In Active Mode, the SAC20 delivers full compute and connectivity performance for:

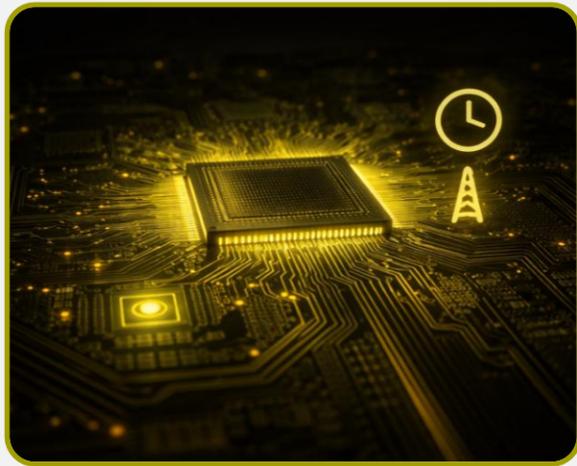


- Data processing
- High-throughput communication
- User interface operations

**Optimization tip:** Even in Active Mode, clock scaling and peripheral gating can reduce unnecessary power draw during short bursts of activity.

## 2. Idle / Standby Mode

Standby Mode keeps the system responsive while minimizing energy consumption.



Key functions such as memory retention and network registration remain active.

### Best suited for:

- Devices awaiting user interaction
- Systems with frequent but short wake cycles

**Buyer value:** Faster responsiveness without the energy penalty of full operation.

## 3. Sleep Mode

In Sleep Mode, most subsystems are powered down, while essential context is retained.



### Typical use cases:

- Periodic data reporting
- Scheduled background tasks
- Battery-powered deployments with predictable duty cycles

**Developer advantage:** Clear APIs and power state hooks simplify implementation at the OS and application layers.

## 4. Deep Sleep / Power-Off Mode

This is the lowest power state, where only minimal circuitry remains active to detect wake-up triggers.



### Ideal for:

- Long-term standby scenarios
- Remote assets with infrequent activity
- Products requiring multi-month or multi-year battery life

**Commercial impact:** Maximum battery longevity and minimal servicing requirements.

To fully leverage SAC20's low-power capabilities, consider the following best practices:

### Optimize Peripheral Usage

Disable unused interfaces (USB, display, sensors) when not required. Peripheral power gating can yield substantial savings.

### Profile, Measure, Iterate

Use real power measurements—not estimates—to validate assumptions and fine-tune transitions between states.

## What This Means for Buyers and Developers

### For Customers:



The SAC20 enables products that last longer in the field, reduce operational overhead, and meet sustainability goals without costly redesigns.

### For Developers:



It provides a robust, well-defined power management framework that accelerates development and de-risks deployment across diverse use cases.



## Conclusion

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Mastering low-power states is essential to building competitive, battery-efficient connected products. With its flexible power architecture and well-defined low-power modes, the **LTSCT SAC20 Smart Module** empowers both business decision-makers and engineering teams to achieve optimal battery life while maintaining performance and reliability.

If battery longevity and energy efficiency are critical to your next design, SAC20 offers a strong foundation to build upon.

## *Future. Made Together.*

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### **Ready to accelerate your connectivity roadmap?**

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