

A Voler Systems Case Study - From Tethered to Truly Wireless Cardiac Monitoring

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2025 /EINPresswire.com/ -- Company:
Confidential Medical Device Innovator

Industry: Medical Devices

Use Case: Wireless Holter Monitor
Development

Services Used: Electronics Design, Firmware, Wireless, Printed Circuit Board (PCB) Design



Voler Systems Logo 2024

“

Voler Systems earned our trust by navigating every challenge with expertise and clarity. The result is a product that stands apart in the cardiac monitoring market.”

Client

Results:

Designed a compact, fully wireless Holter device from concept to production

Achieved reliable 14-day Holter operation and 3-day cardiac/respiratory use

Secured regulatory equivalence for smoother FDA clearance

Customer Introduction

A leading medical device innovator set out to advance cardiac monitoring technology. Traditional Holter monitors often require bulky recorders and tethered smartphone connections, making them inconvenient for patients to use.

This client’s vision was to create a next-generation wireless Holter device, designed to provide extended monitoring with improved comfort and ease of use. They turned to [Voler Systems](#) for expertise in electronics design, firmware, and wireless power to make this next-generation device possible.

Problem/Goal

Lacked wireless functionality.

The device will transmit cardiac data wirelessly, eliminating the need for cables or smartphone tethering.

Limited battery performance.

The device will operate for 14 days on a single charge, with quick recharging following each 14-day use. In 3-day mode, the sampling rate is very fast, continuous and adds respiratory monitoring while maintaining battery life.

Regulatory equivalence required.

The device will replicate the analog front end of the FDA-cleared prior version, so the existing 501(k) approval can be extended.

Solution

Voler Systems delivered a multidisciplinary engineering approach to bring this vision to life:

Designed compact wireless communication and power coils, adapting watch-sized charging technology to achieve precise alignment and overnight recharging.

Developed firmware to manage continuous or event-driven monitoring modes, optimized flash memory usage, and ensured reliable data extraction for cellular downloads.

Engineered a rigid-flex PCB architecture to connect three pods while maintaining signal integrity, impedance matching, and manufacturability through ultrasonic welding.

Built a custom wireless charger with electromagnetic compatibility (EMC) tuning to meet regulatory standards and ensure efficient overnight charging.

Partnered with mechanical engineers to balance electronic performance with form factor, durability, and manufacturability.

Results & Benefits

Enabled a 14-day charged wireless device with no tethered smartphone required.

Delivered continuous or event-driven monitoring modes with seamless data transfer.

Passed extensive regulatory testing by maintaining equivalence with the prior device.

Combined electronics, firmware, and mechanical design into a compact, manufacturable solution.

Inspiration

This project represents one of the most complex and rewarding collaborations for Voler Systems. By solving technical challenges in wireless power, rigid-flex design, firmware, and manufacturability, Voler enabled a truly wireless Holter device that improves patient comfort and clinical outcomes.

"Voler Systems earned our trust by navigating every challenge with expertise and clarity. The result is a product that stands apart in the cardiac monitoring market."

Contact Voler Systems today to learn how our tailored engineering solutions can bring your next medical device innovation to life with the right mix of compliance, reliability, and usability.

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