

Quantum eMotion Finalizes QRNG Hybrid Chip Design, Commences Manufacturing with TSMC

written by Raj Shah | May 26, 2025

May 26, 2025 ([Source](#)) – *Quantum eMotion Corp.* (TSXV: QNC) (OTCQB: QNCCF) (FSE: 34Q0) (“QeM” or the “Company”) is pleased to announce the successful completion and validation of its first-generation Quantum Random Number Generator (QRNG) chip design. The 65-nm CMOS finalized design has been submitted for fabrication to Taiwan Semiconductor Manufacturing Company (TSMC), a leading global semiconductor foundry.

This development marks a significant milestone for QeM. The finalized design—an advanced microsystem based on the quantum electron tunneling effect—has passed all simulations and lab testing, confirming its capability to produce purely random bits at exceptional speeds, all within a single compact chip package. Fabrication is now underway using standard TSMC CMOS process, allowing for scalability and rapid market deployment.

The chip integrates critical components such as an ultra-low-noise wideband amplifier and a high-precision analog-to-digital converter, both successfully prototyped and validated by academic teams at ÉTS Montréal and the Institut Quantique at Université de Sherbrooke. Testing confirmed that the circuits preserved the integrity of quantum randomness, a fundamental requirement for cybersecurity applications.

The device is designed to generate more than 1 Gbit/sec of true quantum random numbers with built-in self-diagnostic capabilities and is intended for seamless implementation on printed circuit boards with minimal external components.

“With this final chip design now entering fabrication, Quantum eMotion is delivering on its vision to contribute to the next generation of quantum-secure hardware,” said *Francis Bellido, CEO of Quantum eMotion*. “This QRNG chip, the first one based on the quantum tunneling effect and protected by four international patents, offers high performance in a fully integrated CMOS format. By embedding quantum electron tunneling into a standard CMOS chip, we are setting a new benchmark in performance, scalability, and integration. This is a decisive step toward enhancing digital security in the face of emerging quantum threats (Inside Quantum Technologies, 2024).”

“We are proud to have contributed to the development and validation of this QRNG chip,” added *Ghyslain Gagnon, Professor at ÉTS*. “Our results confirm that true quantum randomness can be reliably extracted from this architecture, making it a practical solution for high-assurance security systems.”

According to Verified Market Reports (IQT, 2024), the global Quantum Random Number Generator (QRNG) chip market was valued at approximately USD 150 million in 2024 and is projected to reach USD 2 billion by 2033, registering a compound annual growth rate (CAGR) of 34.5% from 2026 to 2033 .

About Quantum eMotion

The Company’s mission is to address the growing demand for affordable hardware and software security for connected devices. Thanks to its patented Quantum Random Number Generator, QeM has become a pioneering force in classical and quantum cybersecurity solutions. This security solution exploits quantum mechanics’ built-in unpredictability and promises to provide enhanced protection for high-value assets and critical systems.

The Company intends to target highly valued Financial Services, Healthcare, Blockchain Applications, Cloud-Based IT Security

Infrastructure, Classified Government Known Technologies and Communication Systems, Secure Device Keying (IOT, Automotive, Consumer Electronics) and Quantum Cryptography.

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