

RAM Group and IGaN partnership advances commercialisation of the world's most advanced whole-body monitoring Quantum Sensor, operating 70% faster than AI

Superior neural network analysis for continuous monitoring combines Artificial General Intelligence (AGI) and compound semicon tech to advance healthcare innovation

Singapore, October 23, 2019 – Locally-based technology providers RAM Group in multi-parametric, single-point bio-electro-mechanical quantum sensor technology and IGSS GAN Pte Ltd (IGaN) fabrication experts in 8" gallium nitride on silicon (GaN-on-Si) announces today the world's first clinically-validated Quantum Device Sensor (QDS) providing non-invasive, continuous whole-body organ system monitoring.

Billed as one of the most advanced sensors of its kind for an array of healthcare applications and wearables, QDS integrates proprietary Artificial General Intelligence (AGI) engine to produce a new level of data sets with the potential to aid immediate and hyper-accurate diagnosis of diseases or disorders in the heart, lungs and other organs.

"Traditional sensors are limited to monitoring one parameter at a time which is costly and requires separate tests that are often too invasive, too specific or need frequent recalibration to produce accurate results. And today, none are capable of continuous monitoring of individual organs," began Ayal Ram, CEO and Founder, RAM Group.

"Powered by proprietary Artificial General Intelligence (AGI) that operates 70% faster than AI in neural net analysis, the QDS addresses the need for small, ultra-low power, non-invasive sensor that can simultaneously and continuously detect minute changes in electrical fields within the human body. It fundamentally transforms the way critical illnesses and disease states are detected, diagnosed and understood sooner with less stress and cost," said Ram.

QDS' advanced sensing platform utilises GaN-on-Si compound semiconductors alongside a set of proprietary materials to create a sensor that reportedly is over ten thousand times more sensitive in signal-to-noise ratio than anything currently in the market. Leveraging IGaN's proprietary GaN 8" (200mm) fabrication technologies, QDS taps into existing silicon infrastructure to deliver superior performance that is at least comparable if not at a significantly reduced total cost, allowing global commercialisation at scale.

Raj Kumar, Founder and Group CEO of IGSS Ventures Pte Ltd, of which IGaN is a subsidiary, explained, "We are excited to bring to this partnership IGaN's in-depth know-how in cost-competitive commercialising and accelerating time-to-market of GaN-on-Si-based technologies. Successful clinical trialling and QDS' market-readiness is case in point for the advanced capabilities of niche semiconductors like GaN-on-Si, particularly as a superior replacement for silicon chips. It must be said that with RAM Group, we can together, enable the adoption of GaN-on-Si sensor-based applications beyond healthcare to further drive Singapore's potential as a global innovation hub in emerging semiconductor applications."

Among the first commercially-ready healthcare application is the quantum Cardio-respiratory Monitor, or qCRM™ which houses the AGI-powered QDS sensor inside a comfortable wearable device to generate comprehensive cardio-pulmonary diagnosis and analysis including cuff-less blood pressure. This is done by converting signals from QDS' Single-Point Monitoring (SPM) chip into unified waveforms that represent comprehensive electrical and mechanical functions and processes of the heart and lungs, as well as intestinal motility, and the interrelation of neurology to the cardiopulmonary system.

The QDS bio-signal analytics goes beyond current technologies that monitor optical fields or mechanical effects like the photoplethysmography (PPG) sensor found in all wearable smartwatches measuring the indirect mechanical movement of the cardiac-cycle alone.

With the ability to not only detect the smallest changes in energy states, it analyses multiple signals in the body and the causal connection between these bio-signals through a single sensor that can do the work of multiple diagnostic devices. QDS enables more robust machine learning through a range and depth of data previously inaccessible, creating an ecosystem to deliver patients the best odds and cost savings from unnecessary procedures, reducing emergency room visits and hospital readmissions.

RAM Group is working to advance its potential by expediting clinical trials, allowing new therapies to reach patients faster. The first QDS product is expected to be commercially available in fourth quarter 2020. Its compound semiconductor-based technology facilitates multi-parametric (HR, RAP, LAP, BP, BR)¹ and multi-variant (heart mechanical functions, cardiac-output, circulatory dynamics, cardiac electrophysiology) analysis, and consumes significantly less power.

“In our study, the qCRM™ performed extremely well against a myriad of accepted monitoring technologies which is extraordinary considering qCRM utilises only one point of contact for the sensor to receive this level of organ function data from the patient,” said Dr. Ardeshir Ghofrani, 2015 German Future Prize winner and leader of the medical research team at Giessen University Hospital. “Operating and analysing continuously, increasing data safety, and removing human errors means that the potential uses for this diagnostic and monitoring technology are significant.”

With the ability to measure the smallest interactions in a multitude of mediums, QDS leapfrogs quantum sensing technologies that tap into US\$23B multi-sector opportunity in 2020 spanning the broadest of applications ranging from health and wellness, food safety, oil and gas, defence, communications, smart cities and homes and automotive.

Both RAM Group and IGaN are headquartered in Singapore and combined, the companies are set to accelerate the adoption of cutting-edge solutions in digital health and other key sectors backed by proprietary manufacturing technologies in niche semiconductors - the backbone to enabling many future-ready end-applications.

¹ HR: Heart-Rate; RAP: Right-Atrium Pressure; LAP: Left-Atrium Pressure; CVP: Central Venous Pressure; BR: Breath-Rate

For more information on the qCRM™, please visit www.ram-group-global.com or contact info@ram.group For more information on GaN-on-Si epitaxial wafers and proprietary 8” (200mm) GaN fabrication technologies, please visit www.igssgan.com or contact enquiries@igssgan.com .

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About RAM Group

The RAM Group is a leading provider of multi-parametric, single-point bio-electro-mechanical quantum sensor technology that is transforming the way critical problems, such as diseases, are detected and diagnosed. They have developed the most advanced IoT enabled quantum sensor technology - significantly smaller, non-invasive and more sensitive than anything on the market. Powered by an industry-leading Artificial General Intelligence (AGI) engine, their clinically and commercially validated technology delivers a new level of actionable insights and is poised to make people, processes and the planet healthier.

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About IGSS GaN Pte Ltd (IGaN)

IGaN is a Singapore-based company focusing in gallium nitride on silicon (GaN-on-Si) epitaxial wafers and proprietary 8” (200mm) GaN fabrication technologies for niche power, RF, and sensor applications. Our solutions drive global technology adoption and customers’ commercialisation goals in cutting-edge applications spanning AV/EV, renewable energy, LiDAR, 5G, high-performance sensors and IoT. Apart from its own IPs and know-how, IGaN has exclusivity of Singapore’s A-STAR’s GaN-on-Si intellectual properties. In offering a “one-stop” approach to GaN-on-Si technologies, its ecosystem includes partnerships with research institutions and leading foundry.

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