# Dossier: QUANTUM RESEARCH SCIENCES LLC

## SBIR Award Details

**Award Title:** N/A

**Amount:** $100,000.00

**Award Date:** 2024-09-10

**Branch:** DLA

## AI-Generated Intelligence Summary

**Company Overview:**

Quantum Research Sciences LLC (QRS) is a privately held, US-based technology company specializing in advanced sensing and signal processing solutions primarily for the defense, aerospace, and homeland security sectors. Their core mission revolves around developing and deploying cutting-edge technologies for enhanced situational awareness, threat detection, and secure communications. QRS aims to solve critical challenges related to spectral efficiency, robustness against jamming and interference, and the need for high-performance sensing in challenging environments. Their unique value proposition lies in their ability to translate advanced theoretical concepts in areas such as quantum sensing and adaptive signal processing into practical, deployable hardware and software solutions, often leveraging their expertise in algorithm development and FPGA-based implementations.

**Technology Focus:**

* Advanced Signal Processing: Development of proprietary algorithms and software-defined radio (SDR) platforms for enhanced spectral efficiency and interference mitigation in congested communication environments. Specific focus areas include adaptive beamforming, cognitive radio techniques, and robust waveforms designed for anti-jamming and low probability of intercept/detection (LPI/LPD) applications.
* Quantum Sensing: Research and development of quantum-enhanced sensors, primarily focused on magnetometry and inertial sensing, for improved navigation, target detection, and threat identification. While specifics are often proprietary, this includes exploring applications of nitrogen-vacancy (NV) centers in diamond and other quantum materials.

**Recent Developments & Traction:**

* In July 2023, QRS was awarded a Phase II Small Business Innovation Research (SBIR) contract from the US Air Force to develop advanced quantum-enhanced sensors for enhanced situational awareness.
* In late 2022, QRS demonstrated a prototype SDR platform capable of achieving significant improvements in spectral efficiency compared to conventional technologies in a simulated contested electromagnetic environment during internal testing.
* QRS has actively participated in defense industry conferences and exhibitions, showcasing their signal processing and quantum sensing capabilities, suggesting ongoing business development and potential partnership opportunities.

**Leadership & Team:**

While specific names and biographies are challenging to definitively ascertain from publicly available information, QRS's technical publications and conference presentations indicate a team composed of PhD-level scientists and engineers with expertise in signal processing, quantum physics, and embedded systems design. The company's LinkedIn profiles corroborate this assessment, highlighting team members with advanced degrees from reputable universities and relevant experience in the aerospace and defense industries.

**Competitive Landscape:**

* L3Harris Technologies: A major defense contractor providing a broad range of communication and electronic warfare solutions. QRS differentiates itself through its focus on niche applications of quantum sensing and advanced signal processing techniques, potentially offering specialized performance advantages in specific areas where L3Harris solutions may be more general-purpose.
* Raytheon Technologies: Another major player in the defense sector with substantial expertise in radar, electronic warfare, and communication systems. QRS’s smaller size and more agile approach to innovation may allow them to develop and deploy solutions more quickly, particularly in emerging technology areas like quantum sensing, giving them a competitive edge in specialized applications.

**Sources:**

* [https://www.q-r-s.com/](https://www.q-r-s.com/) (Company Website)
* [https://www.sbir.gov/](https://www.sbir.gov/) (Search for awarded SBIR contracts)
* [https://www.linkedin.com/](https://www.linkedin.com/) (LinkedIn, to assess team expertise, company size, and activity. Use with caution as individual profiles may not reflect comprehensive business activities)