# Dossier: TRANSWAVE PHOTONICS, LLC

## SBIR Award Details

**Award Title:** N/A

**Amount:** $179,988.36

**Award Date:** 2024-10-16

**Branch:** USAF

## AI-Generated Intelligence Summary

**Company Overview:**

TRANSWAVE PHOTONICS, LLC is a technology company focused on developing and commercializing advanced photonic integrated circuits (PICs) for high-performance microwave photonic systems, primarily targeting defense and aerospace applications. Their core mission is to revolutionize signal processing and data transport in these sectors by providing miniaturized, low-power, and high-bandwidth solutions that outperform traditional electronics. Transwave Photonics aims to solve critical challenges in electronic warfare (EW), radar systems, communications, and sensing by enabling wider bandwidth, lower noise, and improved signal fidelity. Their unique value proposition lies in integrating complex photonic functionalities onto a single chip, offering a significant size, weight, power, and cost (SWaP-C) advantage compared to discrete component solutions.

**Technology Focus:**

* Photonic Integrated Circuits (PICs):\*\* Design and fabrication of custom PICs using silicon nitride (SiN) and indium phosphide (InP) materials to create complex optical circuits for signal processing. These PICs incorporate modulators, filters, switches, and detectors for RF and microwave signal manipulation.
* Microwave Photonic Systems:\*\* Development of integrated microwave photonic systems based on their PIC technology. This includes systems for electronic warfare (EW) receivers, radar signal processing, and high-speed data links. These systems aim to achieve bandwidths exceeding 40 GHz and operate with high dynamic range.

**Recent Developments & Traction:**

* SBIR Funding:\*\* Awarded multiple Small Business Innovation Research (SBIR) grants from the Department of Defense for developing photonic solutions for electronic warfare and radar applications. Examples include topics related to advanced signal processing and miniaturized receiver architectures. (Ongoing).
* DARPA Programs:\*\* Participation in DARPA programs focusing on integrated photonics for defense applications, contributing to research and development efforts in advanced photonic technologies. (Likely ongoing; details limited by public information).

**Leadership & Team:**

(Note: Public information on the leadership team is limited, but general search results suggest the following):

* Key Personnel:\*\* Often mention involvement in various publications and presentations, suggesting a team with strong academic and research backgrounds in photonics and related fields. Search results reveal various names associated with Transwave Photonics in publicly available publications and conference proceedings.

**Competitive Landscape:**

* Phoenics BV:\*\* A European-based company that provides design tools and foundry services for PIC development. Transwave Photonics differentiates itself by focusing on developing integrated \*systems\* based on PICs, rather than primarily providing design and fabrication tools or foundry services like Phoenics BV.
* Lumentum Operations LLC:\*\* While a larger player in the broader photonics market, Lumentum offers some components and modules relevant to microwave photonics. Transwave Photonics can potentially compete by offering more specialized, application-specific PIC solutions tailored to defense and aerospace requirements and by offering improved SWaP-C characteristics.

**Sources:**

1. \*\*SBIR.gov:\*\* (Searched for "TRANSWAVE PHOTONICS" and related keywords) Used to identify SBIR grants awarded to the company.

2. \*\*Defense Technical Information Center (DTIC):\*\* (Searched for publications authored by individuals associated with TRANSWAVE PHOTONICS) Used to identify technical publications and presentations related to their research and development activities.

3. \*\*IEEE Xplore:\*\* (Searched for publications authored by individuals associated with TRANSWAVE PHOTONICS and related keywords) Similar to DTIC, used to identify technical publications and presentations.

4. \*\*Google Scholar:\*\* (Searched for publications authored by individuals associated with TRANSWAVE PHOTONICS and related keywords) Same as above.

5. \*\*LinkedIn.com:\*\* (Searched company profile; limited information publicly available) Provided limited insights into potential team members.