



Project Name: RF Viper SBIR Phase I & II
Application: Intervention System for Wrong Way Driving
Customer: RS Solutions
Website: <https://rssolutionsinc.com/>



SUPPORT OF PHASE I & II SBIR: WRONG WAY DRIVER INTERCEPTER SYSTEM

TESTIMONIAL

"PADT came aboard on this project at an early conceptual stage to help RS Solutions win the Phase I SBIR and continued to support the project through our Phase II work. The team at PADT made valuable contributions to the projects through the entire process."

– Jay Berens
Owner and President
RS Solutions

BACKGROUND AND PROJECT PURPOSE

RS Solutions was looking to develop a method to stop a wrong way driver (WWD) on the roadway ramp, by sending radio frequency (RF) waves into the engine compartment of the WWD vehicle. In Phase I of the SBIR, RS Solutions demonstrated an RF system can successfully cause engine fault, which will stall the motor and require the driver to restart the engine. Phase II of the SBIR expanded on the earlier work, looking to understand if this equipment could be effective across diverse vehicles and at differing speeds. This would inform the viability of potentially developing the design further and taking it to market.

GOALS ACCOMPLISHED

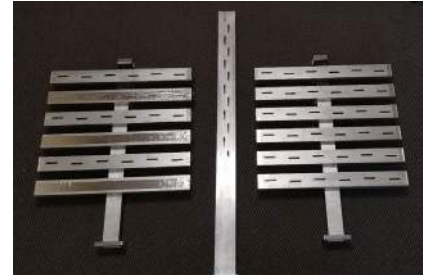
Along with consultation for engineering and test practices, PADT has been able to aid RS Solutions in several innovative developments during this Phase II effort. One of those accomplishments being the development of an RF wireless trigger. The design for this remote-controlled system would energize the magnetrons of RF Viper system from a safe distance. A cooling system was also designed to house and absorb the magnetrons heat using a thermally conductive epoxy potting while also protecting the magnetron from the elements.

WHY PADT?

PADT has extensive experience in simulation, product development, and product testing that contributes well to projects such as this. PADT's team brought four decades of experience in design and development of instrumentation for the aerospace and automotive markets. This experience, along with strengths in project management, systems engineering, and system troubleshooting, has been a key part in the success of this partnership.

PROJECT HIGHLIGHTS:

- Support of SBIR Phase I & II
- Working with a diverse group of experts and consultants
- Developed an RF remote control system to energize magnetrons
- Conceptual design for a magnetron cooling system
- Provided guidance on radome materials for RF antenna system
 - Radome would protect antenna slots in the roadway while still allowing RF energy transmission



Phase I antennas (an 18-slot array, a 12-slot array, and a 36-slot array) that were successfully designed, simulated, built, and tested.

DISCIPLINES EMPLOYED

Antenna development
Materials sciences
Systems engineering
Project management