

Microwave Office Enables First Pass Design Success for World's Only Pocket-Sized Sports Radar Gun

CUSTOMER BACKGROUND

Based in Santa Rosa, California, Pocket Radar™, Inc. designs, engineers and manufactures the world's only pocket-sized personal speed radar gun that delivers accurate real-time speed measurements with the touch of a button.

Utilizing a new breakthrough Doppler radar signal detection and processing system coupled with re-engineered microwave and antenna components that fit into a tiny planar structure the size of a credit card, Pocket Radar employs proprietary digital signal processing algorithms and state-of-the-art intelligent target acquisition techniques to provide users with industry-leading accuracy in speed measurement. Designed for use as a sports radar gun by coaches, players and motorsports fans, Pocket Radar provides full-sized performance in a palm-sized package.

THE DESIGN CHALLENGE

The Pocket Radar team set out to completely redesign the size and shape of traditional radar guns, opening a new market for a small, low-cost, accurate, and convenient product. This required operation at 24 GHz using tiny, low-cost, off-the-shelf components and inexpensive substrates. The first instance of the product was designed through empirical methods and would have required multiple cut-and-try turns to optimize the robust performance of the oscillator and power amplifier and the matching between the two. With very tight budget and time-to-market pressures, rendering multiple board turns with the cut-and-try approach was out of the question. Virtual prototyping and design optimization using AWR software was the correct alternative.

THE SOLUTION

The tight integration of layout, schematic and EM within AWR's Microwave Office software environment provides fast design times and even faster test cycles, enabling the successful redesign of the Pocket Radar device. Additionally, the Microwave Office EM extraction capability made capturing the existing empirical design for further simulation at 24 GHz straightforward and easy, and its EM parameterization readily enabled design centering and optimization. Lastly, the software's oscillator analysis tools provided precise means for understanding and optimization of the oscillator issues. Microwave Office allowed for quick modeling and redesign of the Pocket Radar 24 GHz microwave system and first-pass success.



World's Only Pocket-Sized
Personal Speed Radar Gun



Application:
Radar Gun

AWR Software:
Microwave Office®



"The most positive feature of Microwave Office is its constant innovation towards a powerful, highly integrated, accurate and easy-to-use design environment. Microwave Office allowed me to quickly model and redesign the Pocket Radar 24 GHz microwave system and obtain first-pass success."

Phil Jobson
Consultant
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