## **Advancing beyond**

## Rubidium<sup>™</sup> MG36221A Radar Simulation and Testing

## Introduction

Signal generators are used as LO sources in designing and testing of radar systems. As radar technology has advanced, the detector sensitivity of modern radar systems is often determined by phase noise of the LO source. Doppler shifts in the reflected signals from moving targets at various speeds can vary from a few tens of Hz to tens of kHz. Accordingly, low phase noise of a signal generator used as an LO source at offsets between 10 Hz to 100 kHz helps make better sensitivity measurements of radar detectors that use Doppler shift. The Rubidium signal generator has the lowest phase noise in its class and is ideal for testing radar systems that use Doppler shift to track moving targets.



The Rubidium signal generator has extensive built-in signal simulation capabilities to test pulsed radar systems. There is no need to write a script or a program to simulate pulses reflected from the target. The pulse generator in the Rubidium signal generator can simulate a static target at any distance with its ability to add a fixed pulse delay within a pulse repetition period. It can simulate a moving target with a step delay feature, which will step sweep the pulse delay between start and stop limits. The step size and dwell time at each step can be set to desired values. The amplitude of the delayed pulses can also be varied with concurrently synchronized AM modulation. The pulse generator can also generate up to four pulses with adjustable width and delay within a pulse repetition period to simulate multiple targets or multiple reflections from a target. In summary, Rubidium's breakthrough phase noise performance, with its low phase noise options and pulse simulation capabilities, make it well suited for radar system measurements.

