Target Hardware Simulator Task

**Objective:** Design, build and test a bench top hardware implementation of a target in scene 20 feet away from array.

**Purpose:** Simulator needed to enable efficient development of radar code that demonstrates overall radar performance. Past experience is that a room where the system can radiate is difficult to reserve for long period and room is not designed to deal with multipath reflections causing radar responses that are not controlled enough to develop code where controlled signal scheme is required to verify code is working properly independent of multipath.

**Approach:** Use a combination of RF switches that can be controlled by FPGA, and delay line that emulates the 40 nS delay caused by 20 feet, and attenuator that emulates path loss, and phase shifting trimmer elements to control the phase of each transmit/receive pair path. These elements can be procured as COTs parts which are readily available. Review the diagram in the folder for the architecture.