A company uses a Radar Antenna, and they are required to constantly record variations in  distance and velocity of the scene from the antenna’s field of view. For this Purpose they design their requirements of operation of the Radar in the following way

The Radar sends out a pulse of time duration 100μs through the transmitting antenna and receives the reflected pulse signal through receiver antenna and repeats this transmission every 10ms.

The Radar has a high-speed ADC that samples the data at a rate of 1 GSPS/second and sends out an output stream of bits through 8 LVDS output channels.

The Radar also sends a level trigger during the period of time the pulse is being transmitted.

Since ADC only outputs a stream of data bits, the data acquisition system must use the help of this trigger to identify when the signal is starting to be captured.

Each received pulse being captured will be stored as a 1-D array of 16-bit data.

The system once started will be constantly in operation for a period of 30 minutes.

Diagram

Description automatically generated with medium confidence