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(57) Abstract :
 Our aim was to create a Doppler radar gun. The antenna and transceiver, amplifier and filter circuit, microcontroller, power, and exterior casing subsystems are the five subsystems that make up our radar gun. To send and receive signals, as well as produce our intermediate or Doppler frequency, the MACOM transceiver was utilized with a coated horn antenna. We used the MAX414 operational amplifier in our amplifier and filter circuit because of its excellent performance and low noise. Our bandpass filter has optimal cut-off frequencies of 700 Hz and 7300 Hz, allowing us to monitor speeds between 10 and 170 kph with accuracy. The FHT library was used to derive the true Doppler frequency from an intermediate frequency, and the Arduino was chosen as the controller for our radar gun. The Arduino also calculates speed using the Doppler frequency and displays it on the LCD in kph. The Doppler radar gun demonstrated that it can measure ball speeds from 10 to 170 kph at a range of 0.5 to 50 feet with an accuracy of around plus or minus 1 kph. Our radar gun satisfies all of the requirements and functions brilliantly in real-world situations.

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