

# FOC Test Report: demo\_high\_speed\_motion

Test Name: demo\_high\_speed\_motion

Platform: Renode STM32G431CB

Firmware: iRPC v2.0

Start Time: 2025-10-10 14:47:04

Samples Collected: 1000

Test Duration: 0.193 s

## Performance Summary:

Position Range: [0.000, 7.386] rad

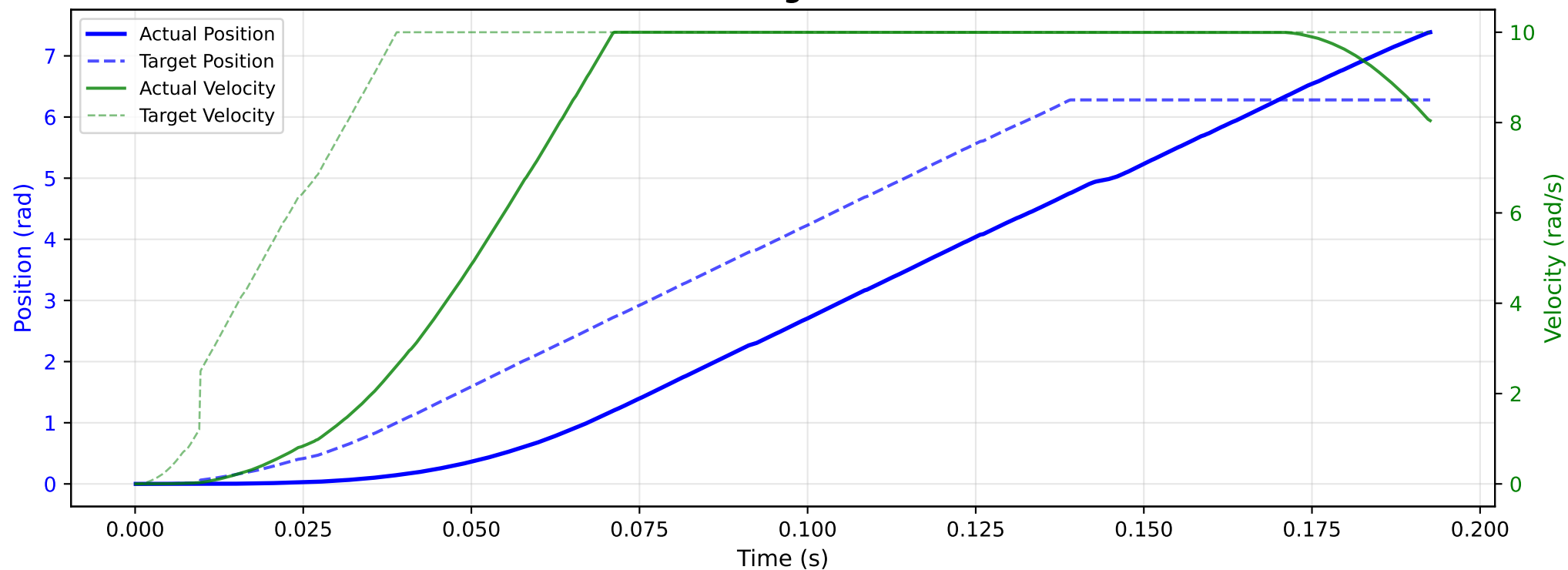
Position Std Dev: 2.435 rad

Max Velocity: 10.000 rad/s

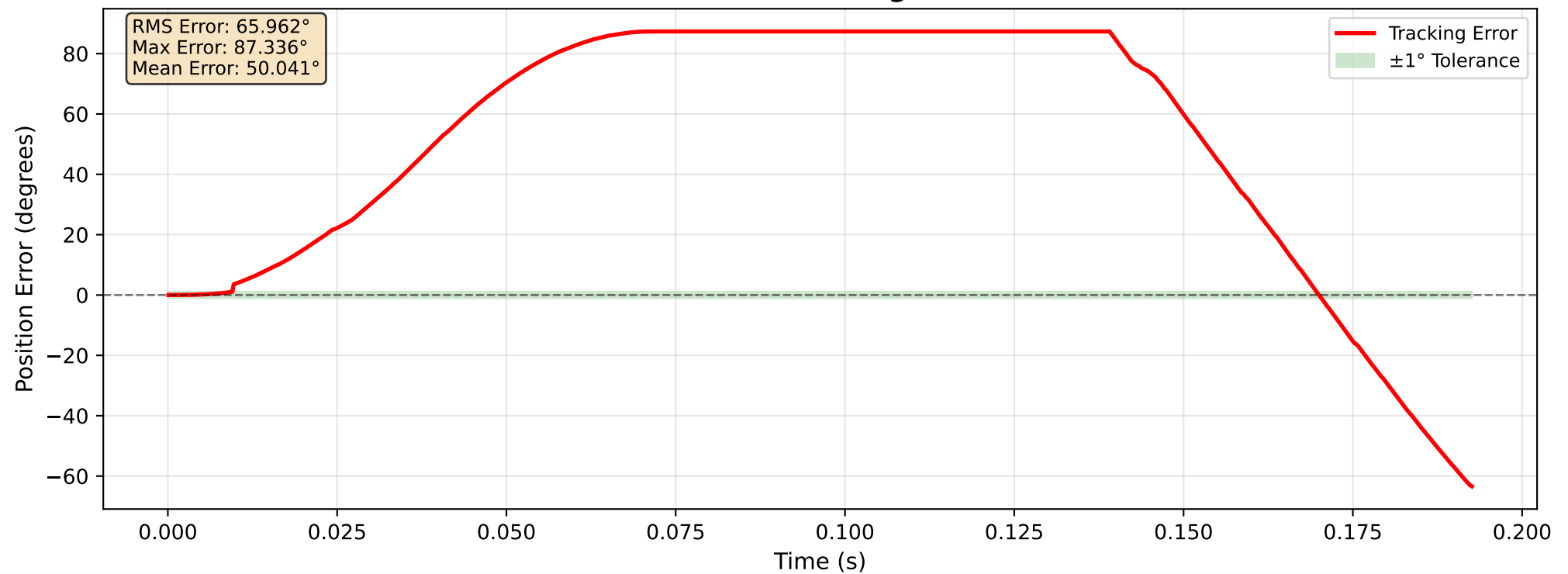
Peak Current ( $I_q$ ): 10.00 A

Mean Current ( $I_q$ ): 6.23 A

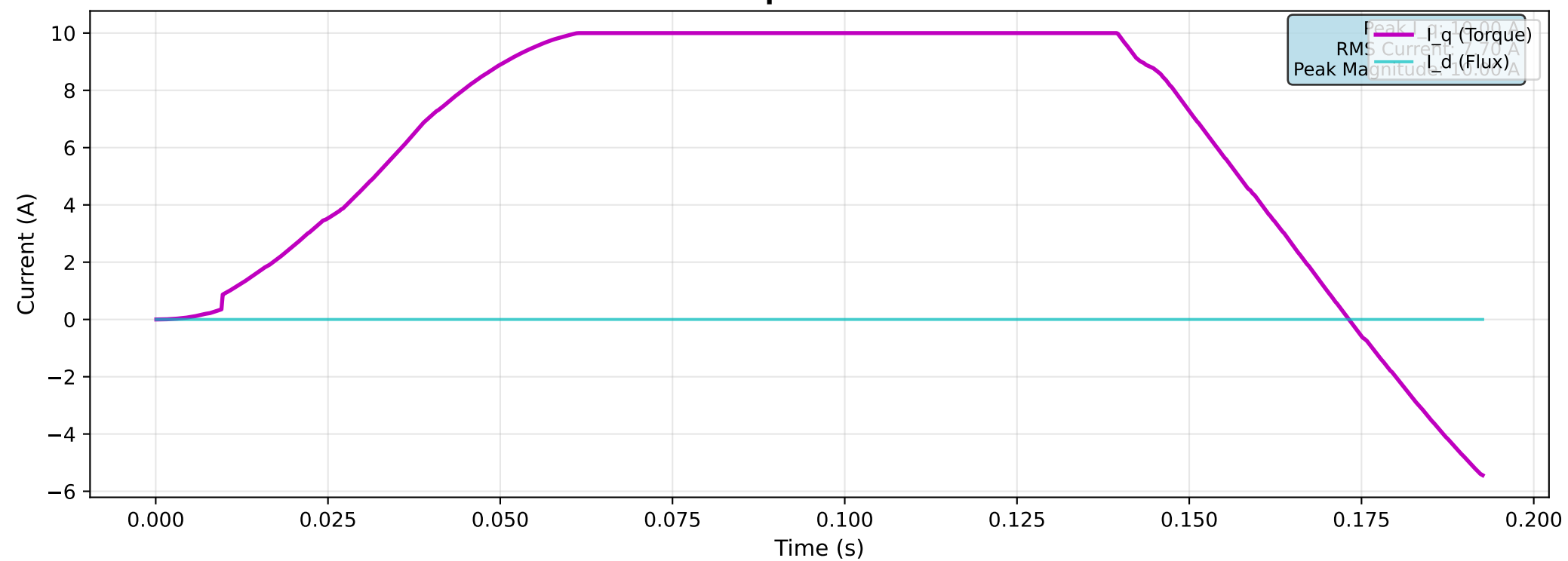
# Motion Tracking Performance



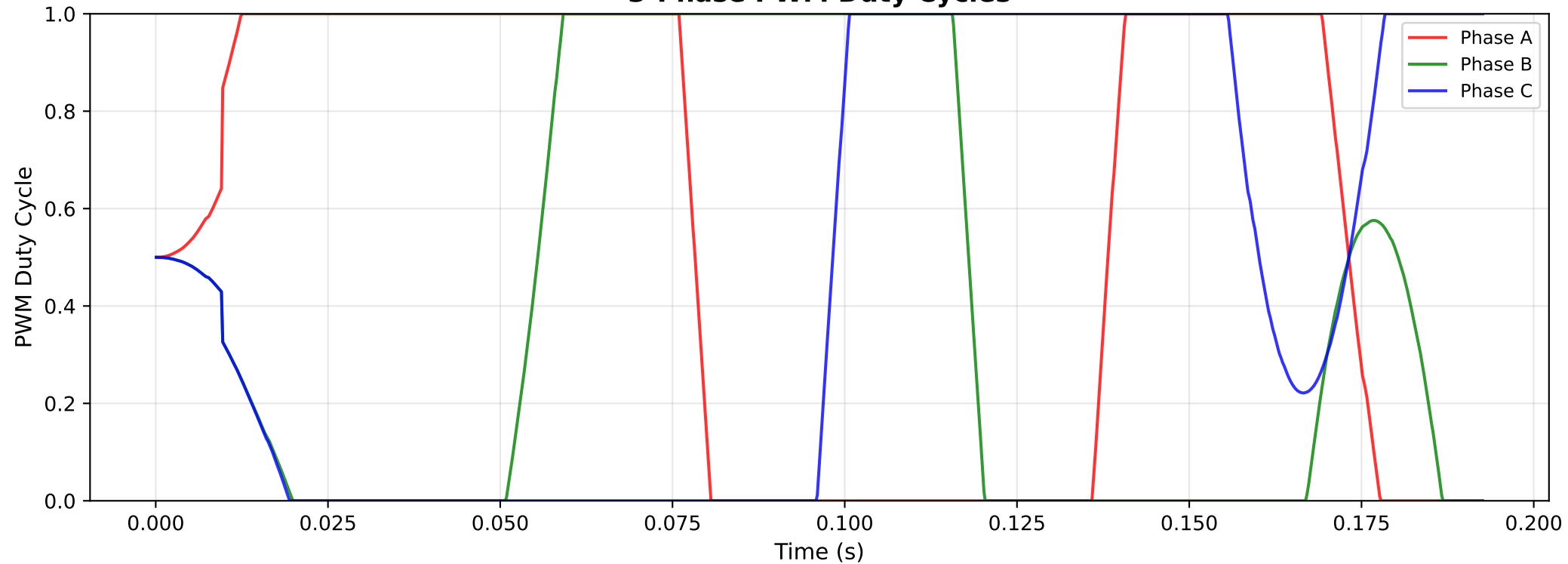
## Position Tracking Error



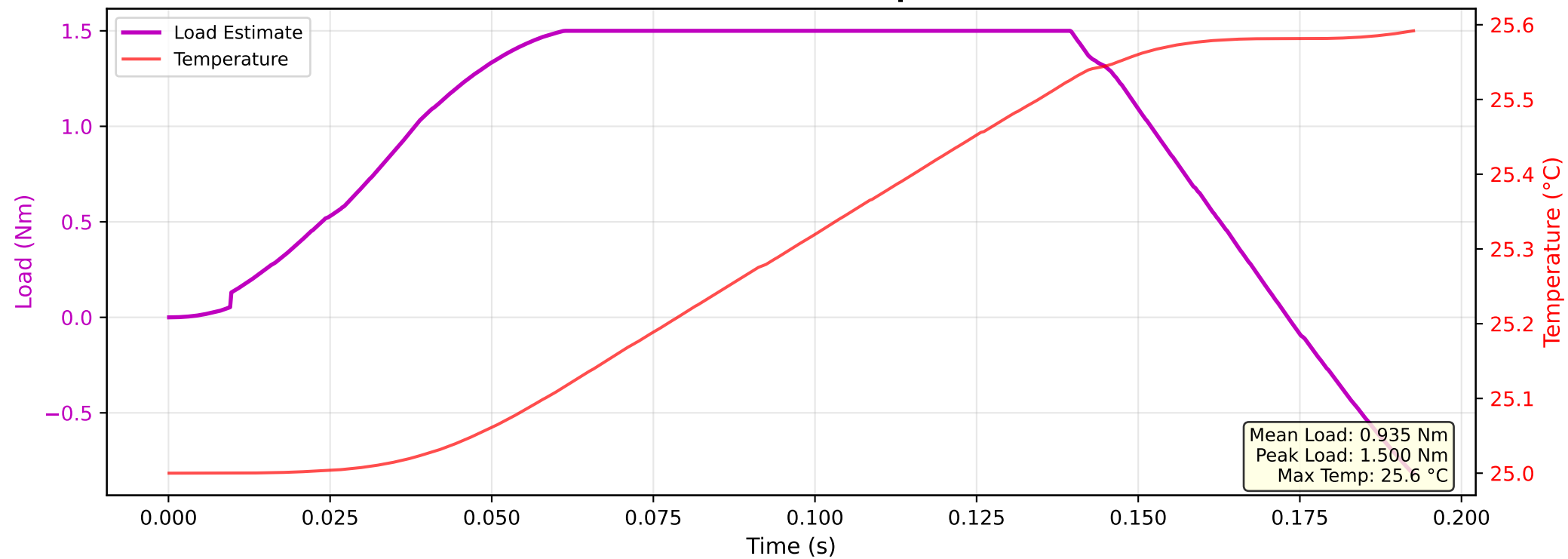
### FOC d-q Axis Currents



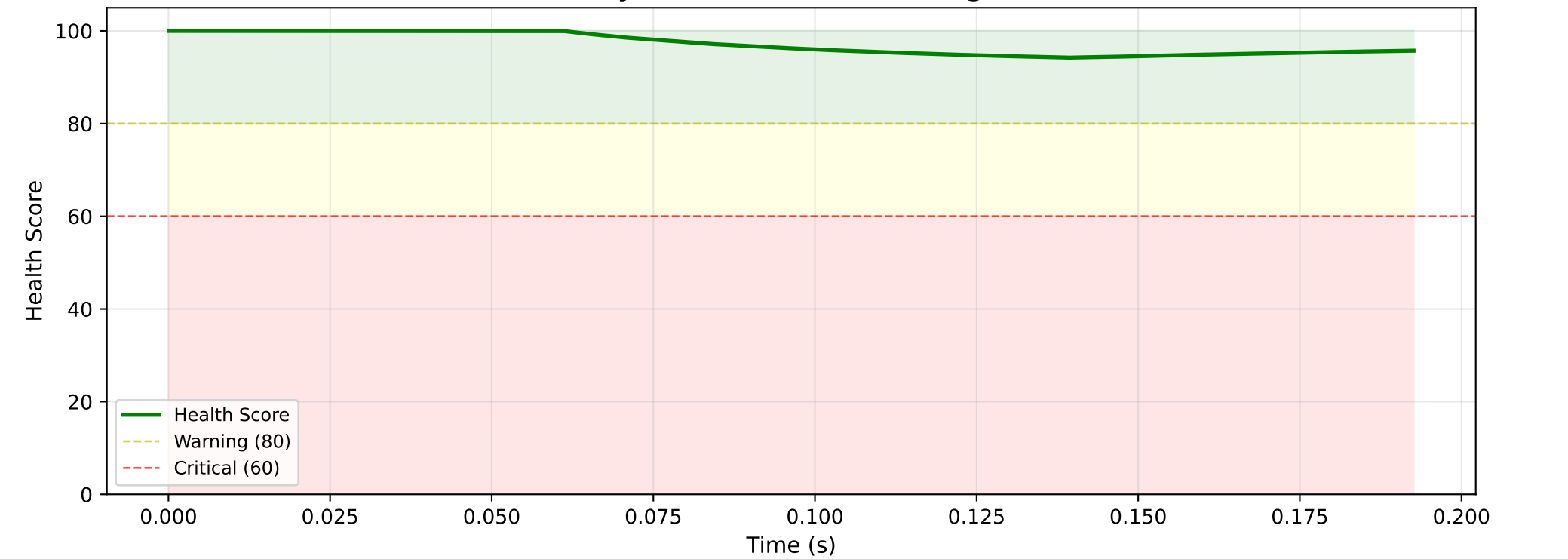
### 3-Phase PWM Duty Cycles



## Load Estimation & Temperature



## System Health Monitoring



**Phase Diagram (Position-Velocity)**

