

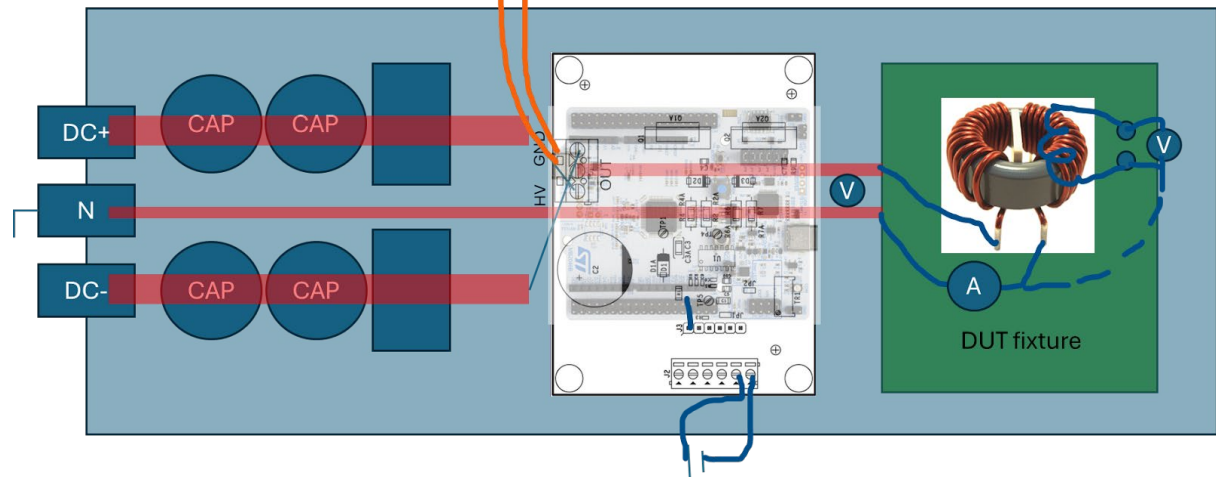
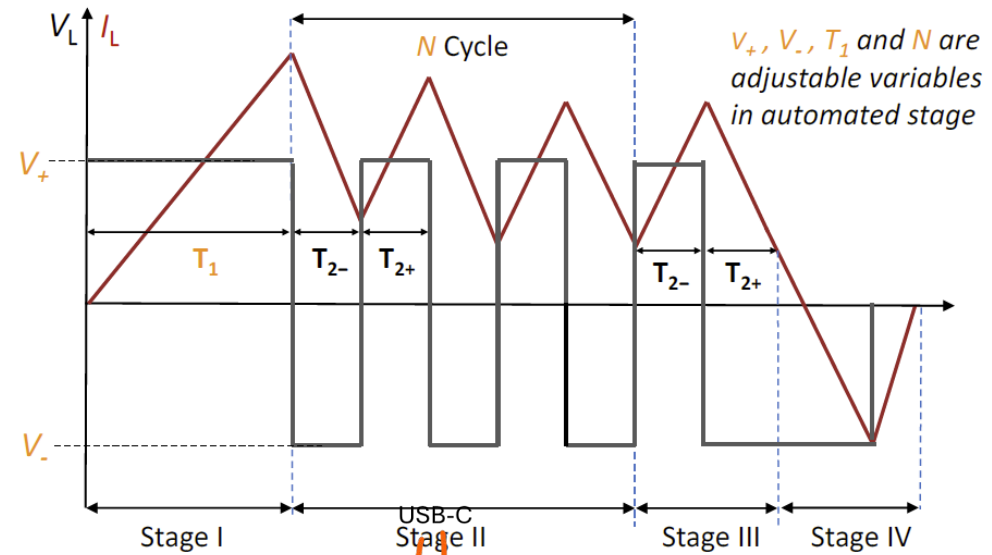
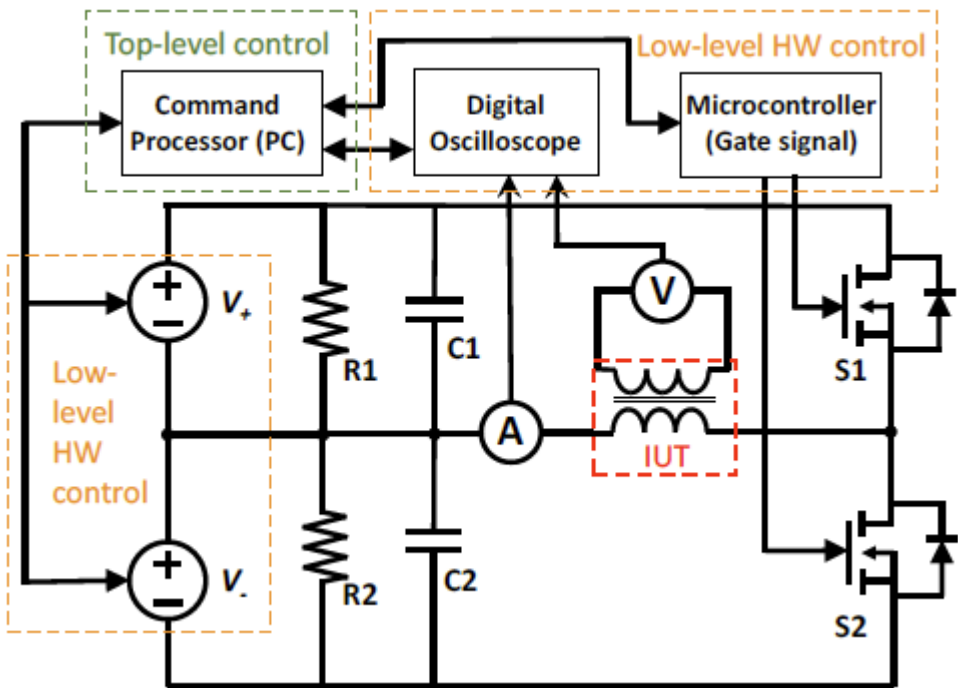
Triple Pulse Testing Open-Source Project

Power Magnetics @ High Frequency Workshop 2025

George Slama, Alfonso Martinez, Jun Wang, Matt Wilkowski,
Binyu Cui, Jingrong Yang



Triple Pulse Test - concept



Testbed - specifications

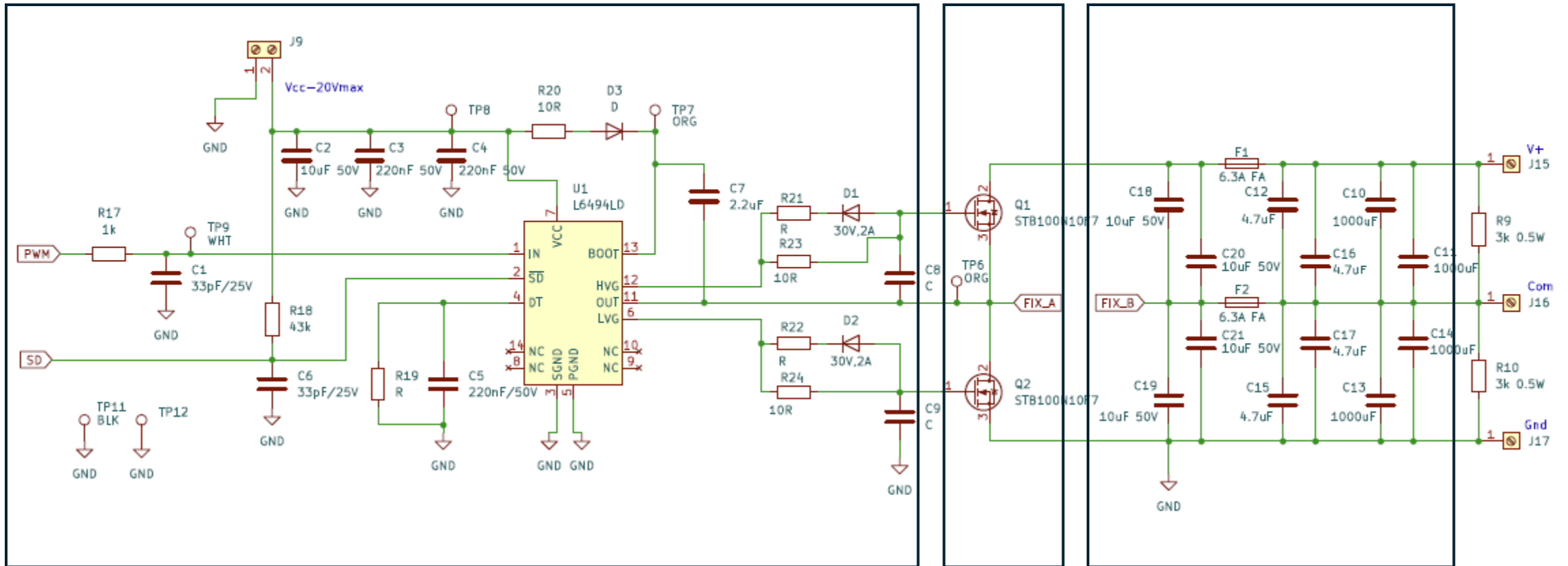
Max voltage	60 V
Max current (dc continuous)	5 Amps
Max test duration	400 us
Allowed voltage drop dc-link	5%
Frequency range	10 kHz - 1 MHz

Testbed - schematic

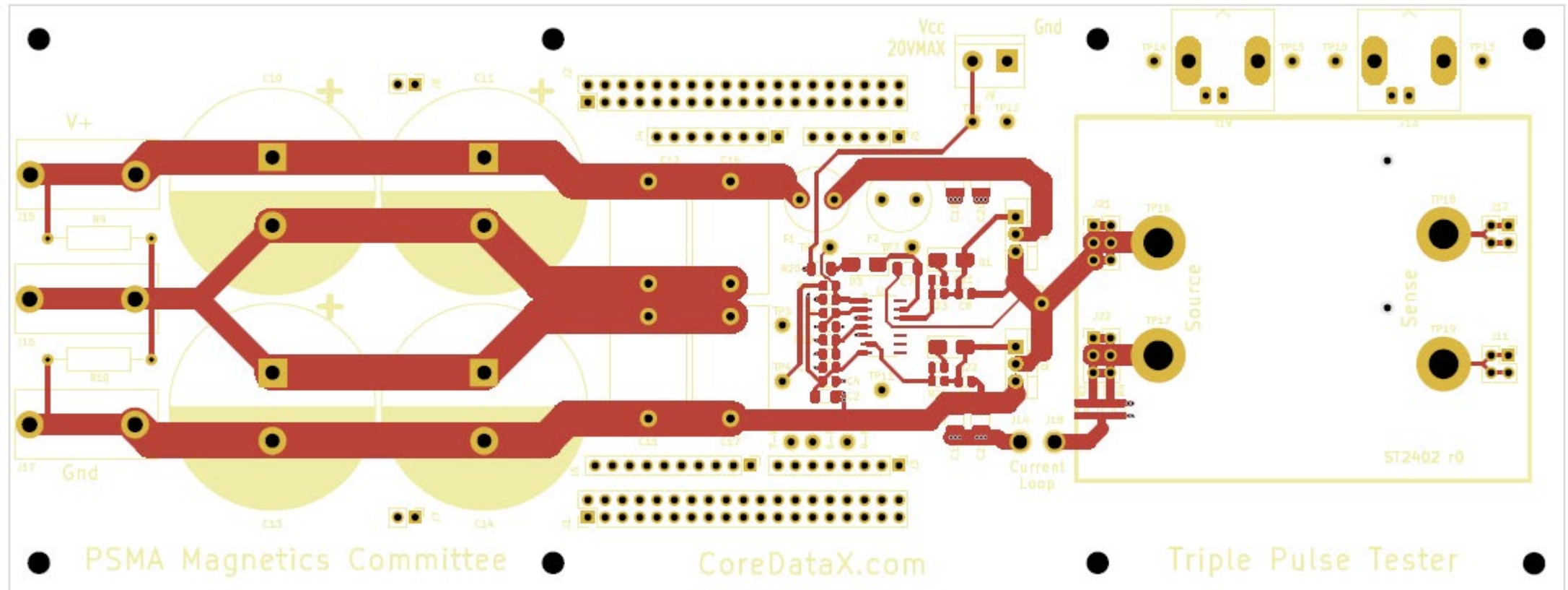
Gate Driving and PWM input

Half Bridge

DC-link with mid-point



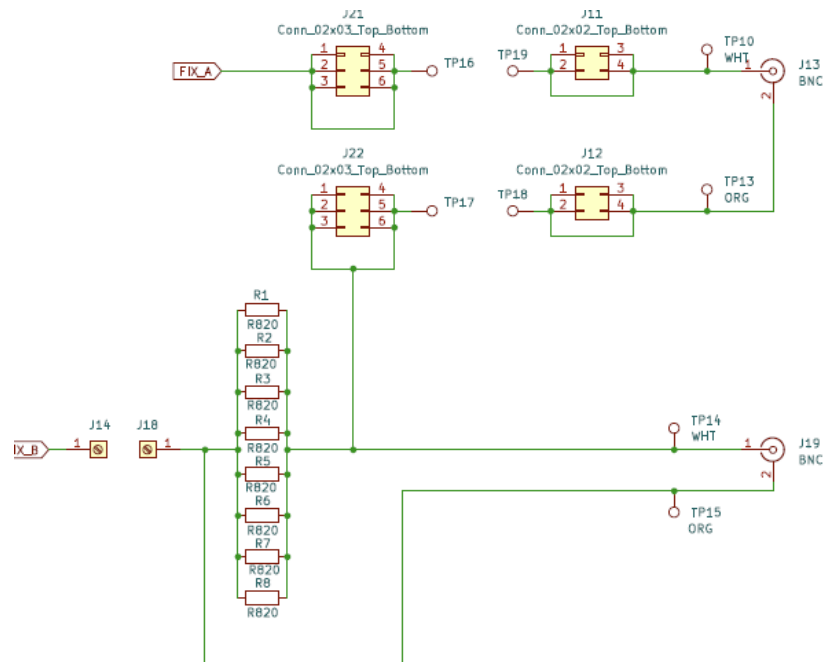
Testbed – PCB layout



Testbed – probing and data requisition

- Resistor-based current sensing

Current sensing



Calibration

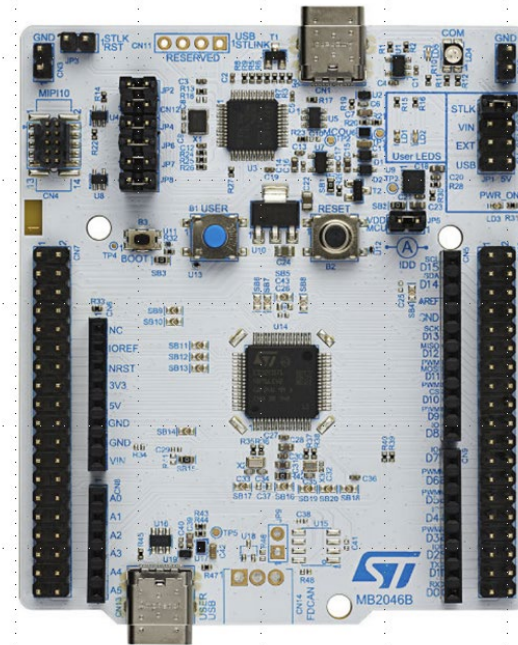
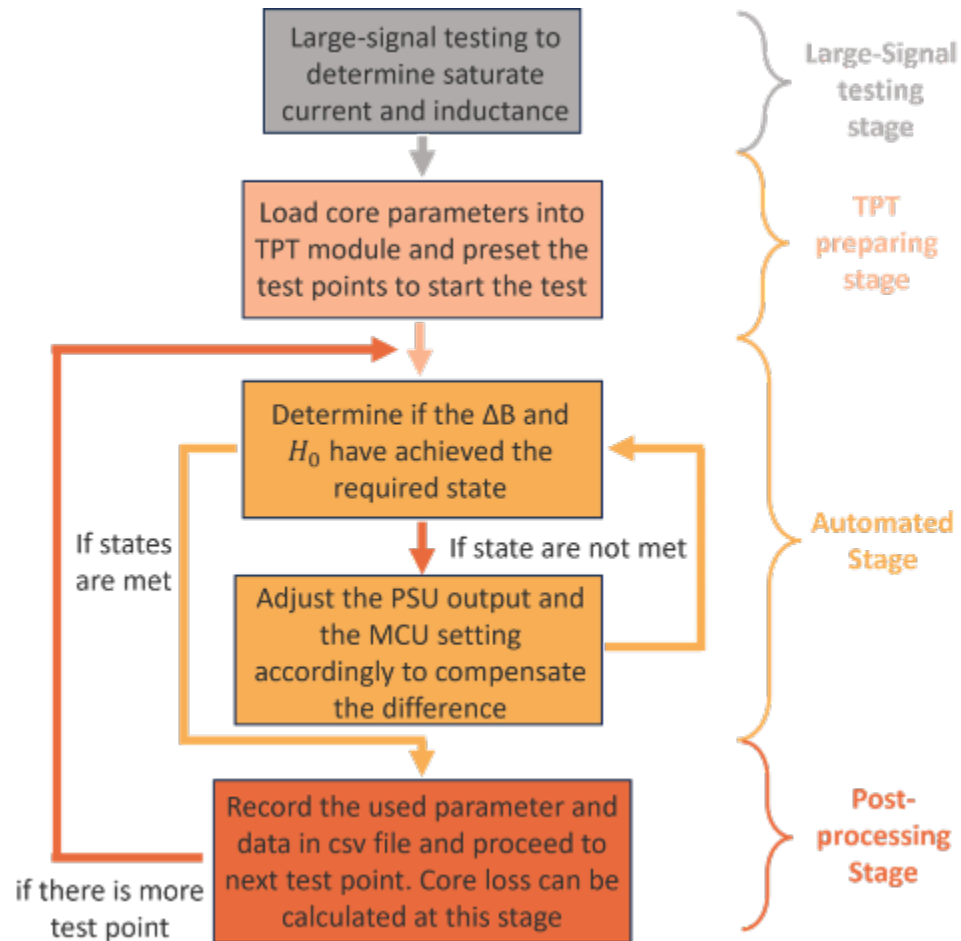
Open Source

- Hardware (PCB)
- Control software
- Data processing

The screenshot shows a GitHub repository page for 'TPT-Bristol'. At the top, it indicates the repository is 'Public' and has '2 Branches' and '0 Tags'. A search bar is present with the text 'Go to file'. Below this, a status bar shows 'This branch is 2 commits ahead of hardware-in-the-loop'. A 'Contribute' button is visible. The commit history shows a commit by 'AlfVII' titled 'Added first version of SCPI server' from 3 weeks ago, with 7 total commits. Below the commit history is a file list with columns for file names, commit messages, and dates. The files listed are 'src', 'tests', '.gitignore', 'LICENSE', 'README.md', and 'requirements.txt'. At the bottom, the 'README' file is selected, showing the repository name 'tpt' and a description: 'Code for the Teensy / Computer application for core losses measurement following the TPT method.'

File	Commit Message	Time
src	Added first version of SCPI server	3 weeks ago
tests	Created new branch, with new folder architecture	3 weeks ago
.gitignore	Created new branch, with new folder architecture	3 weeks ago
LICENSE	Create LICENSE	2 years ago
README.md	Add files via upload	2 years ago
requirements.txt	Created new branch, with new folder architecture	3 weeks ago

Testbed – software loop and microcontroller



NUCLEO-H503RB

Data Post-processing

Photo of the built board

Validation of results

