

# Testing

## Unit Tests

The primary goal of the unit tests are to expand the code coverage for subsystems, typically by mocking the variables necessary to test a single function.

## Functional Tests

Functional tests are used to perform a more in-depth analysis of the degree of functionality for a specific subsystem. Many of the functional tests written for the submarine modules will focus on accuracy of measurements and readings. This will be extremely important in verifying the reliability of the SLAM system implemented on the submarine as new modules are transitioned from simulated testing to real-world.

## In-water Tests

Real-world testing is often performed at Gibb pool, which allows for full systems testing with an in-water pinger.

## Compiling and Running

### Compile All Tests

To compile all tests, execute the following command from any directory:

```
$ rsmake tests
```

### Run All Tests

To run all tests, execute the following command from any directory:

```
$ rsmake run_tests
```

### Run One Test

To run a single test, execute the following command from any directory:

```
$ rostopic robosub <test_name>
```

By default, rostopic creates a new master for all publishers and subscribers. If you wish to view messages being passed between nodes, simply add `--reuse-master` to the above command.

## Tested Components

### Localization

The localization system had an extensive testing suite implemented as part of the SLAM project. Localization is one of the fundamental systems relied upon by the SLAM system, so it's vital that this system performs up to expectations to ensure the maps generated are accurate and usable.

From:

<https://robosub.eecs.wsu.edu/wiki/> - **Palouse RoboSub Technical Documentation**

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<https://robosub.eecs.wsu.edu/wiki/cs/testing/start?rev=1556050879>



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