



CONESTOGA

Connect Life and Learning

Document Title	Board Bring-up plan
Project	Embedded System Hardware design board
Revision	1.0
Date created	August 05,2020
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Program	Embedded System Development
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1. Introduction

- The purpose this document, is to provide a brief idea about the board's components being tested.
- The goal of the document is to make sure that all the circuitry and peripherals are being tested and all of them are working properly.

2. Audience

- Targeted audiences are:
 1. Customers, and
 2. Designers.

3. Scope

- In this document, the data are provided. Data are retrieved from testing the components and circuitry.
- Extra circuitry added to board.
- As we do not have physical board with us. It will not contain following information.
 - Measured voltages on pins
 - Proper soldering is done or not
 - Components are mounted properly or not

4. Elements in the test plan

- Following are the elements or check list for testing
 1. Visual inspection
 2. Power Supply tests
 3. Reset and clock circuit testing
 4. Microprocessor interface testing
 5. Software loading
 6. Peripheral circuit checking
 7. System level checking
- We will discuss all the above points in detail.

4.1 Visual Inspection

- For all the components used check the following parameters
 - Good soldering
 - Proper orientation
 - Correct values
- Check for the any connection left unsolder or not
- Check all the connection are done properly

4.2 Power supply test

- In this test, verify the values for current, voltages and power pin.
- A. Current Monitoring
 - For this test, follow the below steps:
 - Using current limiting device, apply power supply
 - Monitor current, and check whether it is exceeding the design calculation or not.
- B. Voltage verification
 - Measure the voltage at each supply and make sure that its value is acceptable and within tolerance level.
- C. Power pins
 - Measure voltage at all the power pins and make sure that it is within acceptable values.

4.3 Reset and clock circuit testing

- A. Functionality check
 - Trigger the reset by powering up and down the board or manually do it by pressing pushbutton.
- B. Waveforms check
 - Reset waveforms should match the specs of the device being reset.
- C. Rise time and Fall time check
 - Make sure that they have correct shapes.
- D. Oscillator frequency check
 - Measure the oscillator frequency using oscilloscope and make sure that they are oscillating at their designed frequencies.

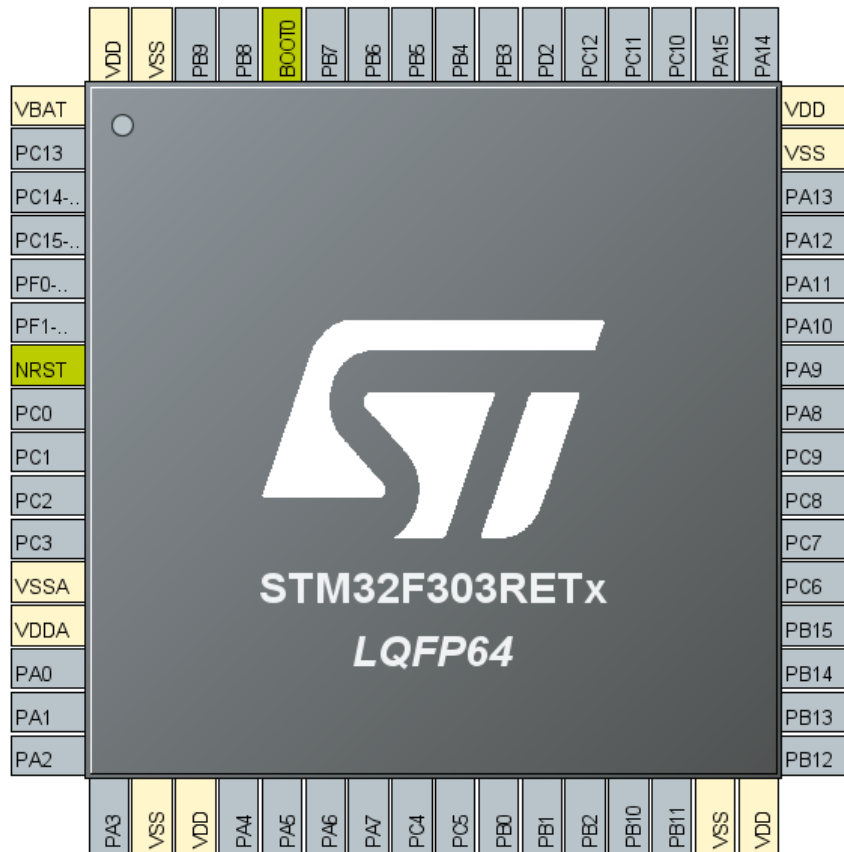
4.4 Microprocessor interface testing

A. Timing check

- Refer to the datasheet and check that interfaces are operating within time limit or not.

B. Signal level check

- Refer to the datasheet and check that all the interfaces are operating at specified signal levels.



4.5 Software loading

A. Input Output test

- Load the software on board and test for all interfaces.
- Poll serial input output to ensure integrity
- Software should be applicable to write input output locations.

B. Memory test

- Test all the memory addresses.
- Software should be applicable to allow reading or writing of memory.

4.6 Peripheral circuit checking

A. LCD

- Check for voltages and signal level
- Test with software
- Check whether it is displaying values or not

B. DC Motor

- Check for voltage and signal level
- Test with software

C. Ultrasonic Sensor

- Check for voltage and signal level
- Test with software
- Make sure it is working with given distance

D. Temperature Sensor

- Check for voltage and signal level
- Test with software
- Test that it is sensing proper temperature

E. Stepper motor

- Check for voltage and signal level
- Test with software

F. RS-232

- Check for voltage and signal level
- Test with software

4.7 System level testing

- Following system level checks are done and recorded.
 - Closing control loops.
 - Connecting to sensors and actuator.
 - Performance testing.

5. Notes

For the voltage supply and power pin signal level check. Measured values are being compared with standard values. But as we do not have our board tables are not included.

6. References

https://en.wikipedia.org/wiki/Conestoga_College

lecture slides and notes