

## **Milestone 3 (M3): Subsystem Unit Testing and Demonstration**

***Completed in Your PRA Session Beginning April 7 – see Schedule Online***

***Grade Value:*** 20% of final grade (team and individual mark)

### **What is the purpose of M3?**

To test and evaluate the delivered subsystem design!

Evaluating the performance of the design submitted and understanding the capabilities and limitations of the delivered subsystem will be the focus of M3. At this point in the course, it is expected that each subsystem team's design has been physically built, powered on, and tested against the subsystem's requirements outlined in the ICD. For each subsystem, there will be a list of tests that your team will conduct, which will be verified by your TA, to evaluate the functionality and performance of the circuit. All the tests listed will be completed unless there is a technical issue with the design that prevents the completion of the test. Results for all tests, regardless of whether your design passes or fails, must be included.

If there is an issue or multiple issues that prevent any test from being completed, your team should attempt to work around the issue to complete the test or as many tests as possible. During the demonstration portion of M3, there will be the opportunity to discuss issues that may be present within the design and the team will have the opportunity to discuss how the issue could be resolved if given more time or if allowed a re-design.

### **What are the deliverables of M3?**

Milestone 3 will be conducted with your Lab TA and will occur during the lab sessions beginning April 7. This milestone will require the completed subsystem to be assembled. All components will need to be soldered onto the printed circuit board designed by the team. Each team must complete testing of the subsystem before the date of their M3 and document the results on the team's DocuWiki. In industry, it is never a good idea to go into a demonstration without having conducted the demonstration prior, and that is true for M3 as well.

There will be two components to the M3 evaluation by your TA. The first will be a series of prescribed tests you are to conduct on the subsystem design you have delivered. The tests will be subsystem-specific and will evaluate the functionality and performance of the circuit in relation to the specifications defined for the subsystem in the ICD. The subsystem tests and procedures are published in a separate document. Results should be compiled in your wiki. The second component of M3 will be a demonstration and Q&A with your Lab TA that will last for at most 30 minutes. This will be an opportunity to walk through the design features, highlight key functionality, and discuss any issues that may be present within the circuit. If there are issues, it would be best to prepare a detailed answer as to what the issue is and how it might be resolved in a future design revision. It is better to prepare before the demo than to try and come up with a solution after the TA asks.

Once in the lab, set up the demo that you would like to show with the subsystem. This might require equipment to be connected and configured prior to the beginning of the demonstration. There will be no

formal documentation required for this milestone, however, the DocuWiki will be reviewed by the TA. As with previous milestones, it is recommended to document design decisions, test procedures, and results on the DocuWiki as you work through the circuit bring-up process.

As in industry, everything about the completed subsystem design during a final demonstration may be questioned to ensure that the design does meet the requirements as stated in the ICD. Be prepared to answer questions as to why certain components were selected, and why the layout or circuit design was done in a particular way. The TA's will use material from the ICD for the basis of their questions.

As with previous milestones, it is expected during the demonstration that all team members contribute. Milestone 3 is individually marked, and the TAs want to hear from each team member and see evidence of work on the DocuWiki.