**SDLC**

**Submission A**

**Software development of INL and DNL for DAC and ADC**

**Understanding**

Parameters for measuring ADC:

1. DNL

2. INL

**DNL**

* Differential Non-Linearity is the difference between two successive voltage levels that the DAC produces.
* Difference between the actual step width occurred and ideal step width for the corresponding voltage.
* The ideal difference between two successive voltages is 1 LSB.
* To generate DNL, take the difference of Vout value from one transition to the next transition and ideal value.

**INL**

* Integral Non-Linearity (INL) is the maximum deviation of actual input-output characteristics from the ideal transfer characteristics.
* It is measured by using the Endpoint method.

**Funtionality**

**Home:**

**Assumption:**

* It is a tab which gives detailed explanation about DNL and INL concepts to the user.
* It is just like a help tab for an application.

**Questions:**

* Whether the definitions can be set as constant in the program, or should it be read from the file to display it?
* What are the concepts that need to be displayed on the home page?

**Mode Selection:**

**Assumption:**

* This tab will have the available modes of operation to perform the test. I.e., ADC and DAC.
* Based on the user selected mode, the test executes its function and displays the result.

**Questions:**

* What needs to be done when the new mode changes, while executing another mode?
* What needs to be set after selecting the operation.

**Configuration:**

**Assumption:**

* It displays the steps that are needed to proceed with the test.
* It provides the settings for the application.

**Question:**

* What are the parameters that need to be in the configuration tab?
* Whether the configuration needs to be updated from any file?

**Status and graph:**

**Assumption:**

* It displays the DNL and INL results in this tab
* It also plots the DNL and INL graph with respect to the codes.

**Questions:**

* From where or how do the input codes need to be generated, to calculate the result?
* At what rate does the data need to be plotted in the graph?
* How much data needs to be displayed in the graph? E.g. Last 100 values.
* Whether the graph needs to be plotted even if user switches another button?

**UI/UX**

1. **Page/Tab selector:**

**Assumption:**

* It has a set of switches which is used to start and perform different functions.
* Based on the user selections, corresponding operation should be performed and display that function.

**Questions:**

1. Whether the buttons can be placed as individual controls, or it could be combined in a cluster?
2. How to handle the case, when the same button is pressed twice by the user?
3. Whether the previous button should go to OFF state, when a new button is pressed?
4. **Icons for pages:**

**Assumption:**

* The icon for the button needs to be stored in a folder.
* The icons need to be loaded to its corresponding button dynamically from the folder when the program runs.

**Questions:**

* Whether the image can be dynamically loaded from the folder during run time?

1. **Work Area:**

**Assumption:**

* It is a tab control which displays the corresponding operations according to user selection.
* It has multiple pages, in which each page displays individual functions.

**Questions:**

* A new value change occurs in the second tab but currently the first tab is displaying to the user. At this case, whether the tab needs to be switched or remains the same?

1. **Status Bar:**

**Assumption:**

* It displays and logs the message when an event occurs in the program.
* When an error occurs in the program, it should also log the error message in red color.
* For every state that executes in the program needs to be logged in the ini file.

**Questions:**

* Whether the error message alone needs to be in red color, or the entire status bar needs to be in red color?
* What are the parameters that need to be stored in ini file? What is the thing that could be stored in “Section”, “Key” and “Value” for each state?
* Whether the ini file can be set to reset or continue with previous values, when we stop the program and execute again?

**Common Question**

* How is analog data produced to calculate DNL and INL values?
* When to stop the result calculation?