### Current Sensing

#### LNA Alarm

* 1. This library shall provide a function to raise various LNA alarms based on current readings.
  2. Null pointers as parameters shall not be allowed.
  3. The low alarm limit for a current reading shall be strictly less than the high alarm limit.
  4. If the current reading is below the low alarm limit, then an alarm indicating that there is a current-related alarm situation shall be raised.
  5. If the current reading is above the high alarm limit, then an alarm indicating that there is a current-related alarm situation shall be raised, and another alarm to indicate that the current is over the high limit shall be raised.

#### HPA Alarm

2.1 This library shall provide a function to raise various HPA alarms based on current readings in all three pumps.

2.2 Null pointers as parameters shall not be allowed.

2.3 The low alarm limit for a current reading shall be strictly less than the high alarm limit.

2.4 If the current reading on any of the three pumps is above the high alarm limit, an alarm indicating a current-related alarm situation related to that specific pump shall be raised.

2.5 If the current reading on any of the three pumps is below the low alarm limit, an alarm indicating a current-related alarm situation related to that specific pump shall be raised.

#### Common Alarm

3.1 This library shall provide a function to raise various alarms based on current readings from internal ADC channels, for both the HPA and the LNA. The function shall check if the current readings from each of these channels are above certain low limits.

3.2 Null pointers as parameters shall not be allowed.

3.3 If any current reading is below its ascribed low limit, an alarm specific to that particular channel shall be raised.

#### Backfacet Alarm

4.1 This library shall provide a function to raise various backfacet alarms based on current readings.

4.2 Null pointers as parameters shall not be allowed.

4.3 If the LNA backfacet current read is below a pre-set LNA backfacet current lower limit, then an error indicating this situation shall be raised.

4.4 If the HPA backfacet current read is below a pre-set HPA backfacet current lower limit, then an error indicating this situation shall be raised.

4.5 If the condition mentioned in Requirement 4.3 is satisfied, a Boolean value indicating a critical alarm situation in the LNA backfacet is returned.

4.6 If the condition mentioned in Requirement 4.4 is satisfied, a Boolean value indicating a critical alarm situation in the HPA backfacet is returned.

#### Current Sensor Update

5.1 There shall be a function provided to update current sensing critical alarm statuses.

5.2 This function shall call an externally implemented function (from another module) to read the values of current for each channel (the function shall be executed once per channel). If this function, at any point, returns a non-success error message this shall be reflected in the outer function.

5.3 This function shall call an externally implemented function (Outlined in Current Sensing Section 1: LNA Alarm) that will determine whether or not to raise various LNA alarm flags based on current readings. If a critical alarm is raised, a separate function, also externally implemented, indicating that a critical error has been detected in the booster shall be executed.

5.4 This function shall call a function (Outlined in Current Sensing Section 2: HPA Alarm) that will determine whether or not to raise various HPA/Booster alarm flags based on current readings. If a critical alarm is raised, a separate function, also externally implemented, indicating that a critical error has been detected in the HPA shall be raised.

5.5 This function shall call a function (Outlined in Current Sensing section 3: Common Alarm) that will determine whether or not to raise various common alarms based on current readings. If a critical alarm is raised, a separate function, also externally implemented, indicating that a critical error has been detected shall be raised.

5.6 If the function mentioned in Requirement 5.3 returns an error, this shall be reflected in the outer function.

5.7 If the function mentioned in Requirement 5.4 returns an error, this shall be reflected in the outer function.