Use Case I5S1: Detailed Description

Use Case Name: Manage Calculated Weather Data
Scenario: S1: Manage Heat Index Data
Brief Description: With the System Running, the User requests the Heat Index Data from the System. The System calculates the Heat Index from the the temperature and humidity mission data, returning it to the User.
Actors: User
Related Use Cases: *Use Case I4: The User shall manage mission data*

Stakeholders: Users who want to manage the current Heat Index Data.

Preconditions: The System is running, the iButton is connected to the receptor or another reading device. The iButton receptor or other reading device is connected to the computer.

Postconditions: The Heat Index Data is calculated and returned to the User. The User can choose how to archive the data or evaluate the data imediately.

Flow of Events

User	**System**
1. Requests Heat Index Data	
2. Requests the Units for displaying the Heat Index Data (Celsius, Fahrenheit Kelvin)	
	3. Retrieves the temperature data (See **Use Case I4**), Retrieves the humidity data (See **Use Case I4**)
	4. Applies the appropriate Heat Index Calculation
	5. Converts the data to the appropriate units as requested by the User.

Exception Conditions
3a. If either the temperature or humidity data or both could not be retrieved for the heat index calculation, then the system indicates the error by setting the Heat Index to a defualt value (NaN) as well as a possible reason for the error (One Wire Network or One Wire Device issues).

3b. If the mission record time for either the temperature or humidity data are not the same, then the system indicates the error by setting the Heat Index to a default value (NaN).

4a. If the temperature is too low for an accurate Heat Index Calculation (temperature $< 70^{\circ}F$), then the system indicates the issue by setting the Heat Index to a default value (NaN).

4b. If the relative humidity is too low for an accurate Heat Index calculation (humidity $< 0\%$), then the system indicates the issue by setting the Heat Index to a default value (NaN).