Use Case S5: Detailed Description

Use Case Name: Calculate Heat Index
Scenario: N/A
Brief Description: With the System running, the System request the Temperature (in Fahrenheit) and Relative Humidity and calculates the Heat Index by applying the specific formula.
Actors: System
Related Use Cases:
Use Case S1: *The System Shall Monitor the Temperature Data.*
Use Case S2: *The System Shall Monitor the Humidity Data.*
Use Case S16: *The System Shall Save the Heat Index Data.*
Stakeholders: Local and National Weather Bureaus, other systems and users monitoring local weather data.
Preconditions: The System is running, the Temperature and Humidity Sensors are working properly and are connected to the network. The 1-Wire Network is setup and working properly.
Postconditions: The Heat Index is calculated from the Temperature and Relative Humidity data using the appropriate converstion formula.

Flow of Events

System	**Appropriate Sensors**
1. Periodically request temperature data from the One Wire Temperature Sensor **(See Use Case S1: Monitor Temperature Data)**	2. Returns the Temperature Data
3. Periodically request humidity data from the One Wire Humidity Sensor **(See Use Case S2: Monitor Humidity Data)**	4. Returns the Humidity Data
5. Calculates the Heat Index from the Requested Temperature and Humidity Data using the appropriate formula	

Exception Conditions
2a, 4a. If for any reason the One-Wire Network stops functioning properly adn returns the defualt temperarture and/or default humidity **(See Use Cases S1, S2)**, then the System shall report a default Heat Index (-999.9), making no attempt at a Heat Index calculation.
2b. If for any reason the One-Wire Temperature Sensor stops working adn returns the default temperature **(See Use Case S1: Monitor Temperature Data)**, then the System shall report a default Heat Index (-999.9), making no attempt at a Heat Index calculation.
4b. If for any reason the One Wire Humidity Sensor stops working and returns the default humidity **(See Use Case S2: Monitor Humidity Data)**, then

the System shall report the default Heat Index (-999.9), making no attempt at a Heat Index calculation.