DHT-11 sensor

Obinna Ndubuisi

# Maximum
Minimum

TESTING

Accuracy

Temperature

Maximum

Method

Put sensor high above hair blower and gradually lower till reading stop rising.

Recording

75.2 Celsius[167.36 Fahrenheit]

```
Humidity: 89.00%   Temperature: 75.20°C 167.36°F   Heat index: 527.73°C 981.92°F
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```

Minimum

Method

Put in freezer that gets colder than lower limit and check when reading stops decreasing.

Recording

-16 Celsius[3.2 Fahrenheit]

```
Humidity: 67.00%   Temperature: -14.10°C 6.62°F   Heat index: -17.70°C 0.13°F
Humidity: 67.00%   Temperature: -16.00°C 3.20°F   Heat index: -19.79°C -3.63°F
Humidity: 66.00%   Temperature: -16.00°C 3.20°F   Heat index: -19.82°C -3.68°F
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```

Accuracy

Method

Check temperature with SHT31 sensor which has better temperature accuracy than DHT-11= 0.2C, and check the percentage difference across multiple temperatures.

Recording

1) SHT31: 75F, DHT-11: 75.2F

2) SHT31: 39.8F, DHT-11: 40.5F

3) SHT31: 9.8F, DHT-11: 10.1F

Average Percentage Error

1.691%

Humidity

Maximum

Method

Put sensor in the shower with the hot
water on till reading stop rising.

Recording

95 %RH

```
Humidity: 95.00%  Temperature: 28.90°C 84.02°F  Heat index: 38.31°C 100.95°F
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Humidity: 95.00%  Temperature: 28.90°C 84.02°F  Heat index: 38.31°C 100.95°F
Humidity: 95.00%  Temperature: 28.80°C 83.84°F  Heat index: 37.95°C 100.30°F
Humidity: 95.00%  Temperature: 28.80°C 83.84°F  Heat index: 37.95°C 100.30°F
Humidity: 95.00%  Temperature: 28.70°C 83.66°F  Heat index: 37.59°C 99.66°F
Humidity: 95.00%  Temperature: 28.70°C 83.66°F  Heat index: 37.59°C 99.66°F
```
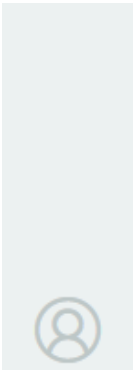
Minimum

Method

Put in dry oven and check when reading stops decreasing.

Recording

0 %RH

```
Humidity: 0.00%   Temperature: 43.70°C 110.66°F   Heat index: 37.62°C 99.72°F
Humidity: 0.00%   Temperature: 43.90°C 111.02°F   Heat index: 37.80°C 100.04°F
Humidity: 0.00%   Temperature: 44.10°C 111.38°F   Heat index: 38.00°C 100.39°F
Humidity: 0.00%   Temperature: 44.30°C 111.74°F   Heat index: 38.22°C 100.80°F
Humidity: 0.00%   Temperature: 44.50°C 112.10°F   Heat index: 38.55°C 101.39°F
Humidity: 0.00%   Temperature: 44.70°C 112.46°F   Heat index: 38.65°C 101.57°F
Humidity: 0.00%   Temperature: 44.90°C 112.82°F   Heat index: 38.75°C 101.76°F
```

Accuracy

Method

Check humidify with SHT31 sensor which has better humidity accuracy than DHT-11 = 2 %RH and check the percentage difference across multiple temperatures.

Recording

SHT31: 22.20 %RH, DHT-11: 22 %RH

SHT31: 51.40 %RH, DHT-11: 50 %RH

SHT31: 71.61 %RH, DHT-11: 70.32 %RH

Average Percentage Error

2.78%