# Testing Manual - Real-Time Environment Monitor with RTC and DHT11

1. I verified the RTC clock through a logic analyzer. Period: 30.5us. Therefore, the frequency is 32.768KHz.

A screenshot of a computer

Description automatically generated

1. I verified that the DHT11 is sending the data in the correct manner.

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1. The low time between data is around 50us (I got 53.6us)

A screenshot of a computer

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1. Bit 0 is high for 26-28 us. Calculated 24us

A screenshot of a computer

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1. Bit 1 is high for 70us. Calculated 70us

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1. To verify the data is received correctly, I added the humidity and temperature values and confirmed that the sum is equal to the checksum (last 8 bits). If not, I’ve kept a print statement mentioning the data is corrupt.
2. I verified that the I2C bus is working and the data is being sent as I needed. I also checked the timing parameters of the bus.

A screenshot of a computer

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A screenshot of a video game

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1. These are some of the main test cases I tried for the project:
2. I verified the temperature and humidity readings on the LCD with a logic analyzer.
3. I increased the temperature and humidity by placing the sensor near a warm cup of water and verifying the temperature and humidity increases. I did the same with ice to ensure it decreased.
4. I kept printing the temperature to see if there is any glitch since there is an RTC interrupt that also prints on the LCD and both mustn’t affect the other.
5. I timed the clock for 20+ mins to ensure accuracy.
6. I typed a long string for the echo command to make sure the cursor positions are working well and there is a wrap-around. This also helped to verify the program can handle relatively lengthy data.
7. I tried out the command processing tests that were in place for assignment 6.