[7-1](https://learn.snhu.edu/d2l/le/content/1426483/viewContent/27467908/View) Project Submission Report

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Based on SysTec’s business requirements and technical specifications, developing a working thermostat protype requires peripheral support, cloud capabilities, and enough flash and RAM to support the code. The peripheral that needs to be supported is I2C for reading the onboard sensor, GPIO for LED control, and UART for transferring data to a server.

Throughout this course, I utilized a board from TI and after completing the final project, I can say TI meets the peripheral requirements. Through further research, the TI board also supports Wi-Fi capabilities and even has a supported phone application to help connect to the board. Lastly, this board supports up to 256kB of RAM, which also meets the requirements. (CC3220S, n.d.)

Another board that was similar to the TI board I was using was Microchip’s WF132 series of boards. This board supports onboard LEDs and user-configurable buttons, onboard temperature sensors, onboard light sensors, and Wi-Fi capabilities. After making a connection with Amazon web services, this board can even communicate with Alexa products via voice commands. For the memory requirements, this board comes with 32Mbit external SPI Flash Memory. (WFI32-IoT Development Board, n.d.) Based on SysTec’s business requirements and technical specifications, this board meets every requirement.

When searching for Freescale microcontrollers, I was surprised that they seemed to have merged with a company called NXP. A microcontroller developed by NXP called the K32W0x series. This device does support WPAN connectivity but follows IEEE low-rate 802.15.4 standards. This board also supports most of the required peripherals like I2C and UARTS, but I could not find any mention of GPIO support. This board does meet the memory requirements with 640Kb embedded flash, 152 KB RAM, and 1MB of additional Flash. (B.V., n.d.)

With everything taken into consideration, all three of these boards have their uses. These boards all support some form of wireless connectivity, meet memory requirements and support peripherals. However, the NXP product falls short in just about every requirement. With the low rate it offers with its Wi-Fi and the fact that it does not meet every peripheral required by SysTec’s business requirements and technical specifications, I would not recommend SysTec to use this board.

# References

B.V., N. S. (n.d.). *NXP K32W041A ZBPro R22 + GP Proxy Basic*. Retrieved from https://csa-iot.org/csa\_product/nxp-k32w041a-zbpro-r22-gp-proxy-basic-2/.

*CC3220S*. (n.d.). Retrieved from https://www.ti.com/product/CC3220S.

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