**Steps to Limit the Raspberry Pi Model B+ to Match iOBC:**

**1. Limit CPU Frequency:**

* The Raspberry Pi Model B+ runs at a higher clock speed than the iOBC (700 MHz vs. 400 MHz). You can limit the CPU frequency using the following steps:
* Open the configuration file:

bash

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sudo nano /boot/config.txt

* Add the following line to limit the CPU frequency to 400 MHz (iOBC spec):

bash

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arm\_freq=400

* Save and reboot your Raspberry Pi to apply the changes:

bash

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sudo reboot

**2. Limit RAM Usage:**

* The Raspberry Pi Model B+ has 512 MB of RAM, but the iOBC has only 32 MB. You can artificially limit the available RAM using cgroups (Control Groups).
* Install cgroups utilities:

bash

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sudo apt-get install cgroup-tools

* Create a new cgroup to limit RAM usage to 32 MB:

bash

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sudo cgcreate -g memory:/limited\_ram

sudo cgset -r memory.limit\_in\_bytes=32M /limited\_ram

* Launch any process with limited RAM:

bash

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sudo cgexec -g memory:/limited\_ram <your\_command>

**Not necessary**

**3. Storage Constraints:**

* The iOBC uses two 2 GB SD Cards for mass storage. You can simulate this by partitioning the SD card of your Raspberry Pi to limit the available storage space to 2 GB (or use a 2 GB microSD card).
* Create partitions using fdisk and format them using mkfs:

bash

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sudo fdisk /dev/mmcblk0

sudo mkfs.ext4 /dev/mmcblk0p1

**4. Limit Power Consumption:**

* While you cannot directly control power consumption on the Raspberry Pi to match 380 mW, you can reduce power usage by disabling unnecessary peripherals and services.
* Disable HDMI, WiFi, and Bluetooth to reduce power:

bash

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sudo tvservice -o # Turn off HDMI

sudo ifconfig wlan0 down # Turn off WiFi

sudo systemctl disable hciuart # Disable Bluetooth

**5. Interface Configuration (I2C, SPI, UART):**

* The iOBC has I2C, SPI, UART, ADC, PWM, and GPIO interfaces, which are also available on the Raspberry Pi Model B+.
* Enable these interfaces on your Raspberry Pi by running raspi-config:

bash

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sudo raspi-config

* Navigate to **Interfacing Options** and enable I2C, SPI, and UART.
* Use libraries like wiringPi or RPi.GPIO to control these interfaces.

**6. Code Storage (Limit Flash Size):**

* The iOBC uses 1 MB NOR-Flash for storing code. You can simulate this by creating a RAMDisk of 1 MB for storing code:

bash

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sudo mount -t tmpfs -o size=1M tmpfs /mnt/flash

* Use this directory (/mnt/flash) to simulate code storage with limited space.