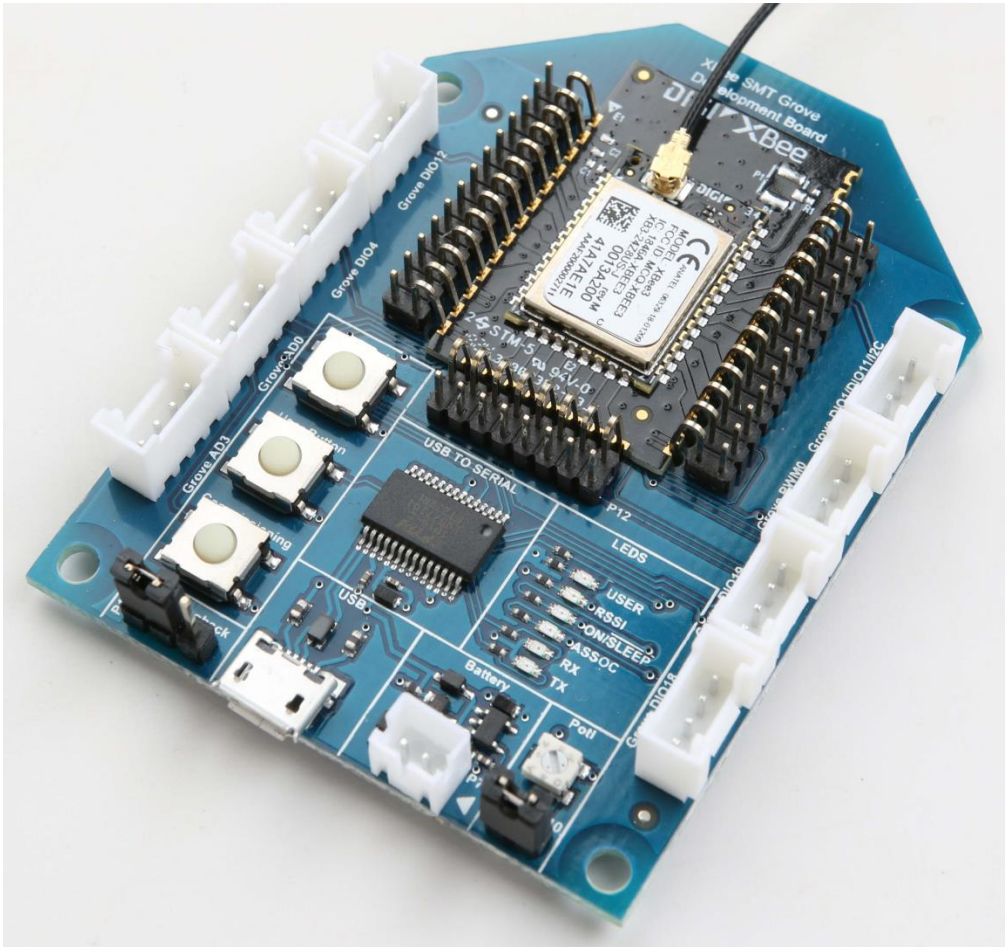
XBee Radio Modules



DigiMesh Primer

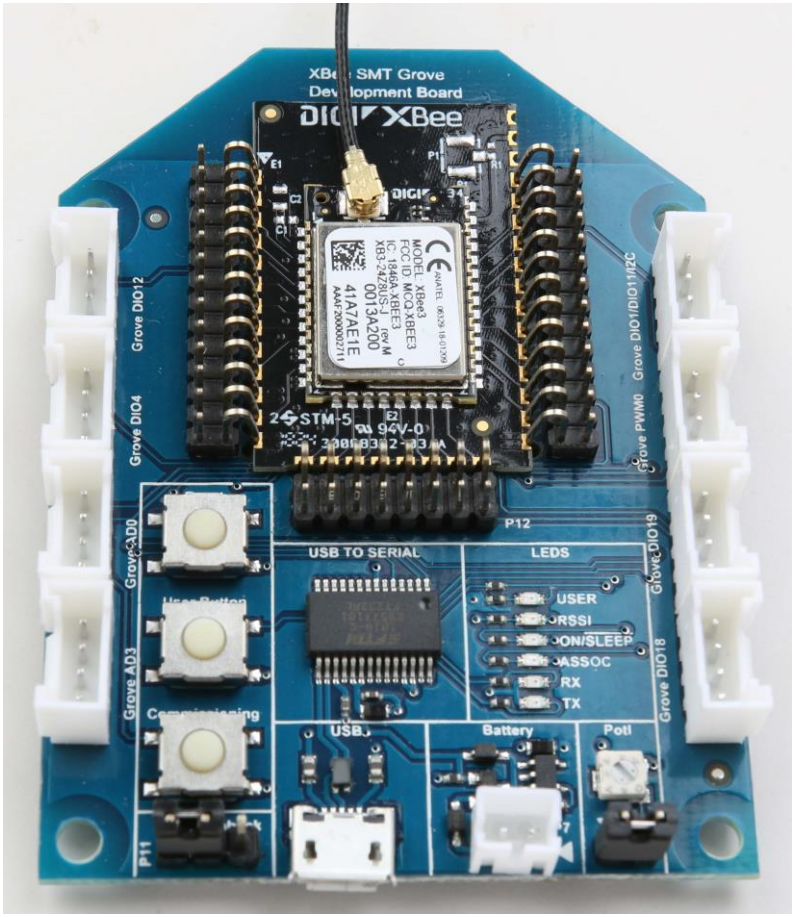
January 30, 2020

Fred Eady

Presented by:

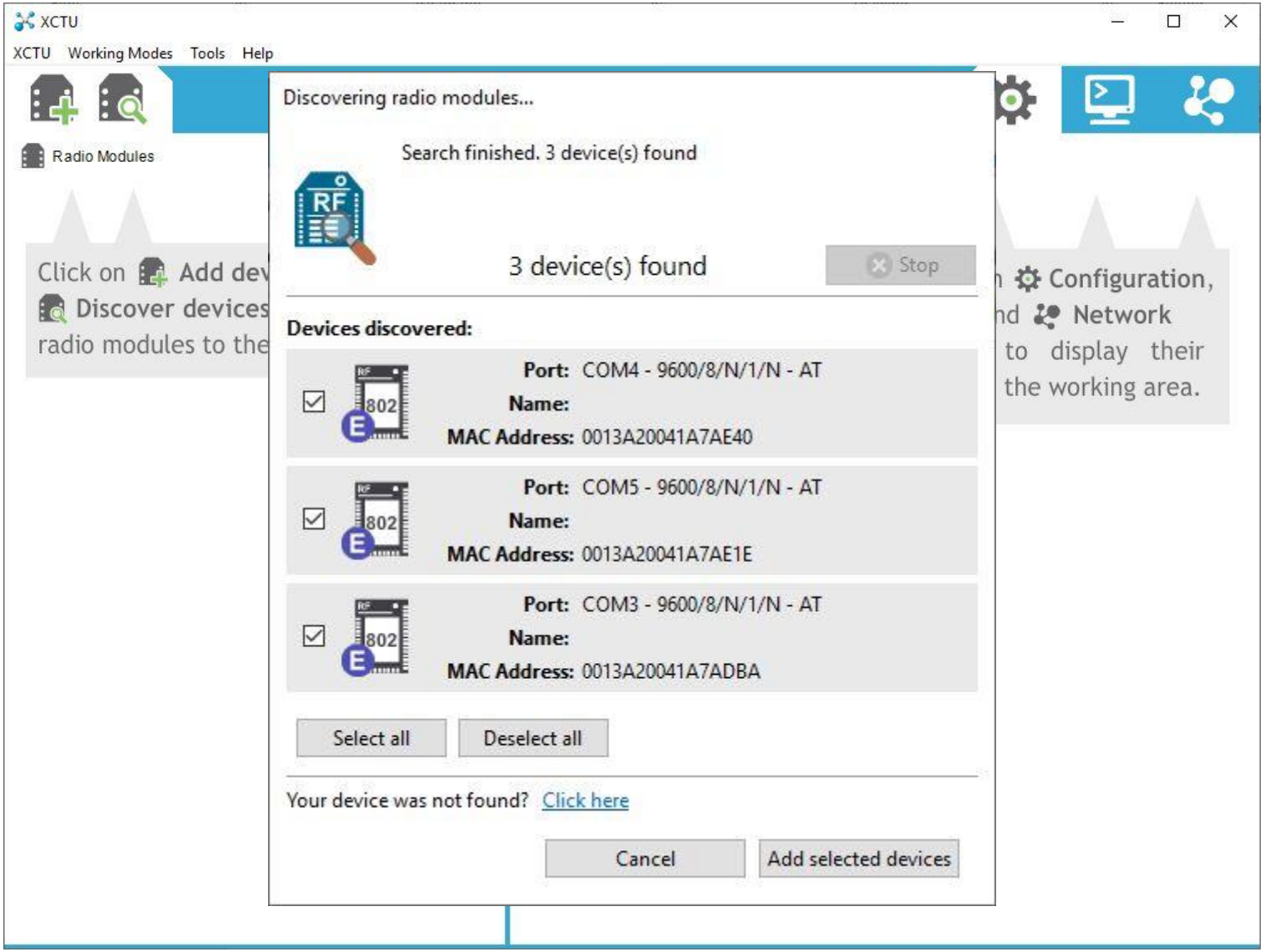
AGENDA

- DigiMesh Basics
- DigiMesh and MicroPython
- Day 4 Summary



XBee Radio Modules

DigiMesh Basics – Update the XBee Modules



XBee Radio Modules

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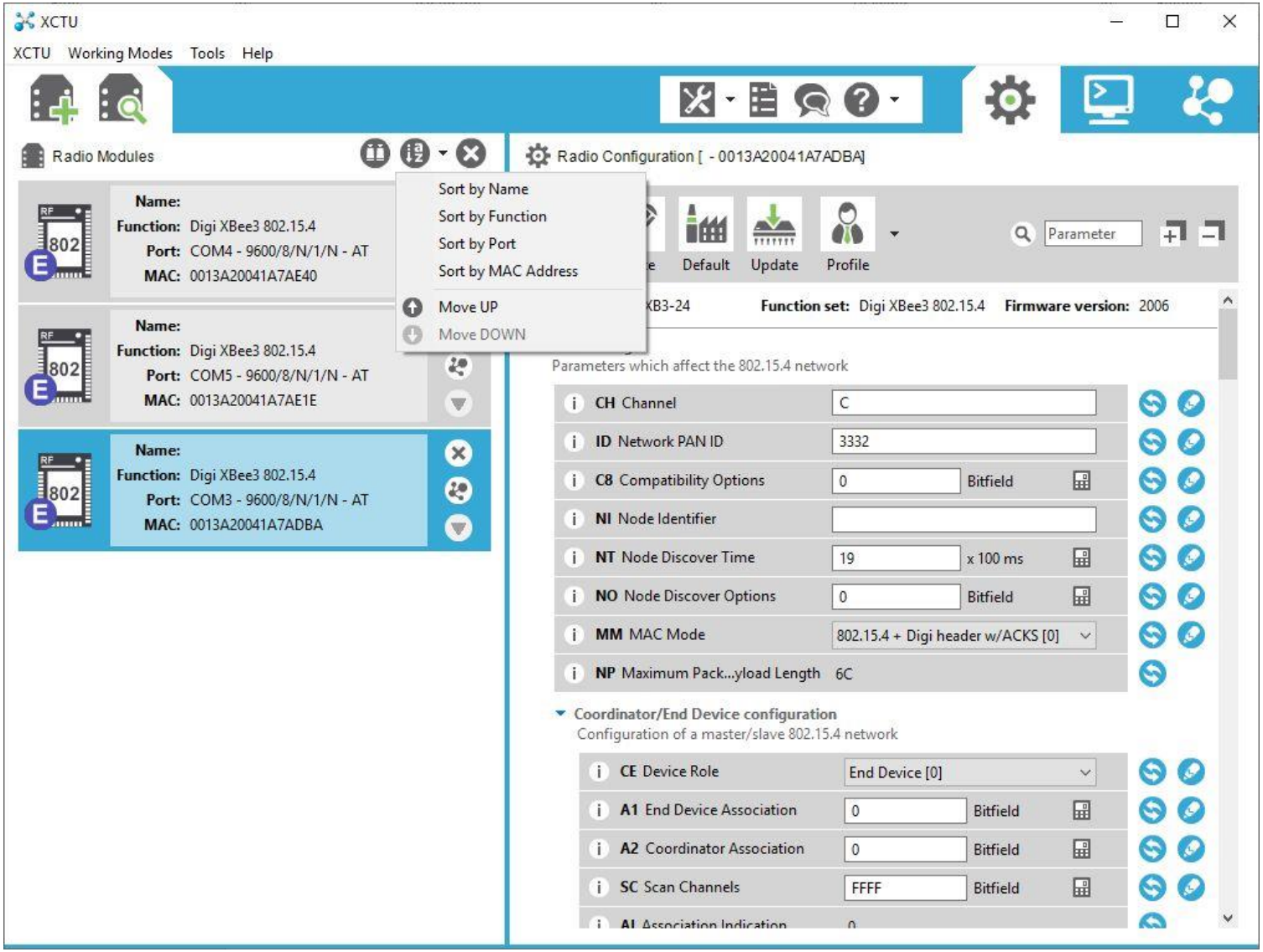
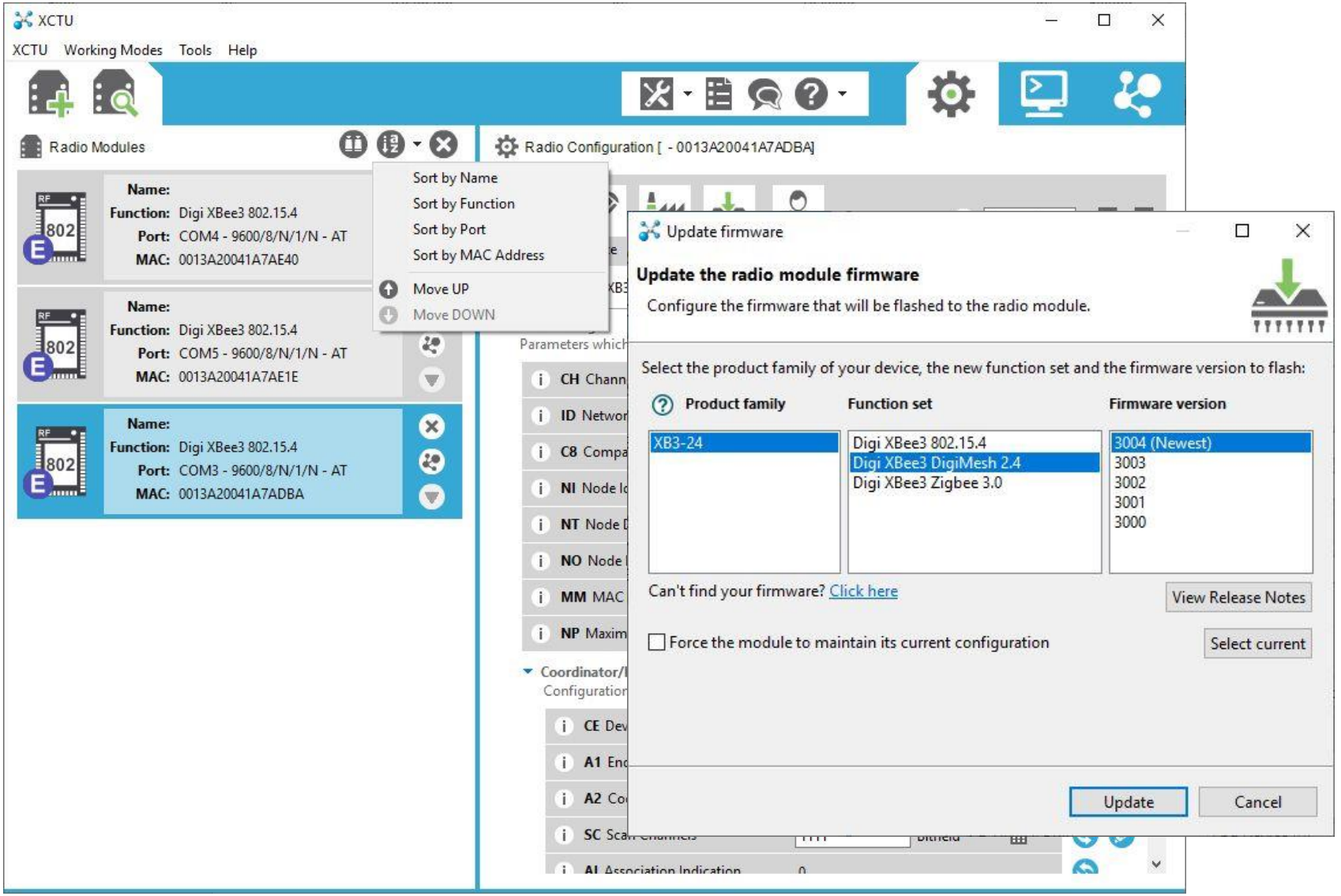


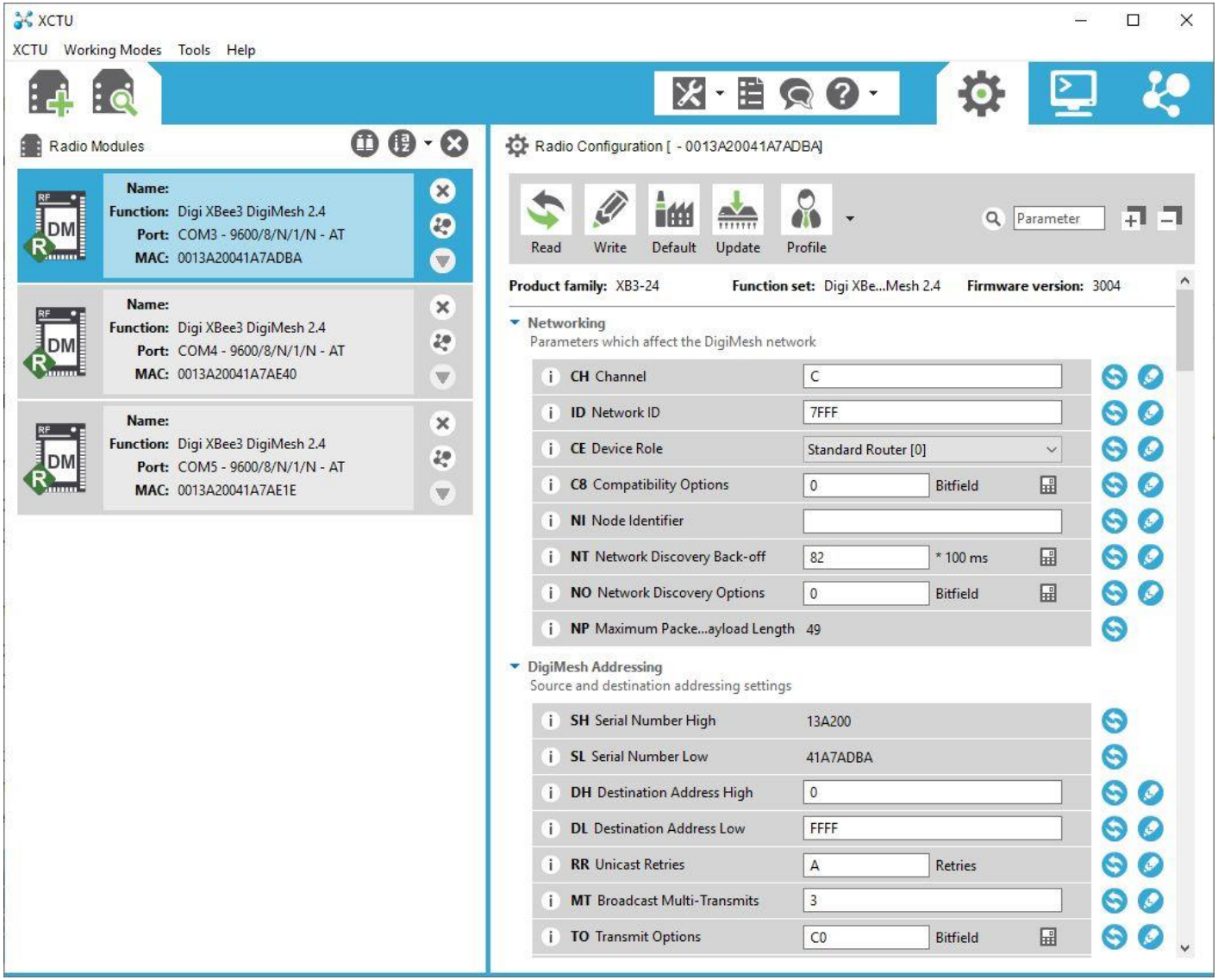
XBee Radio Modules

DigiMesh Basics – Update the XBee Modules



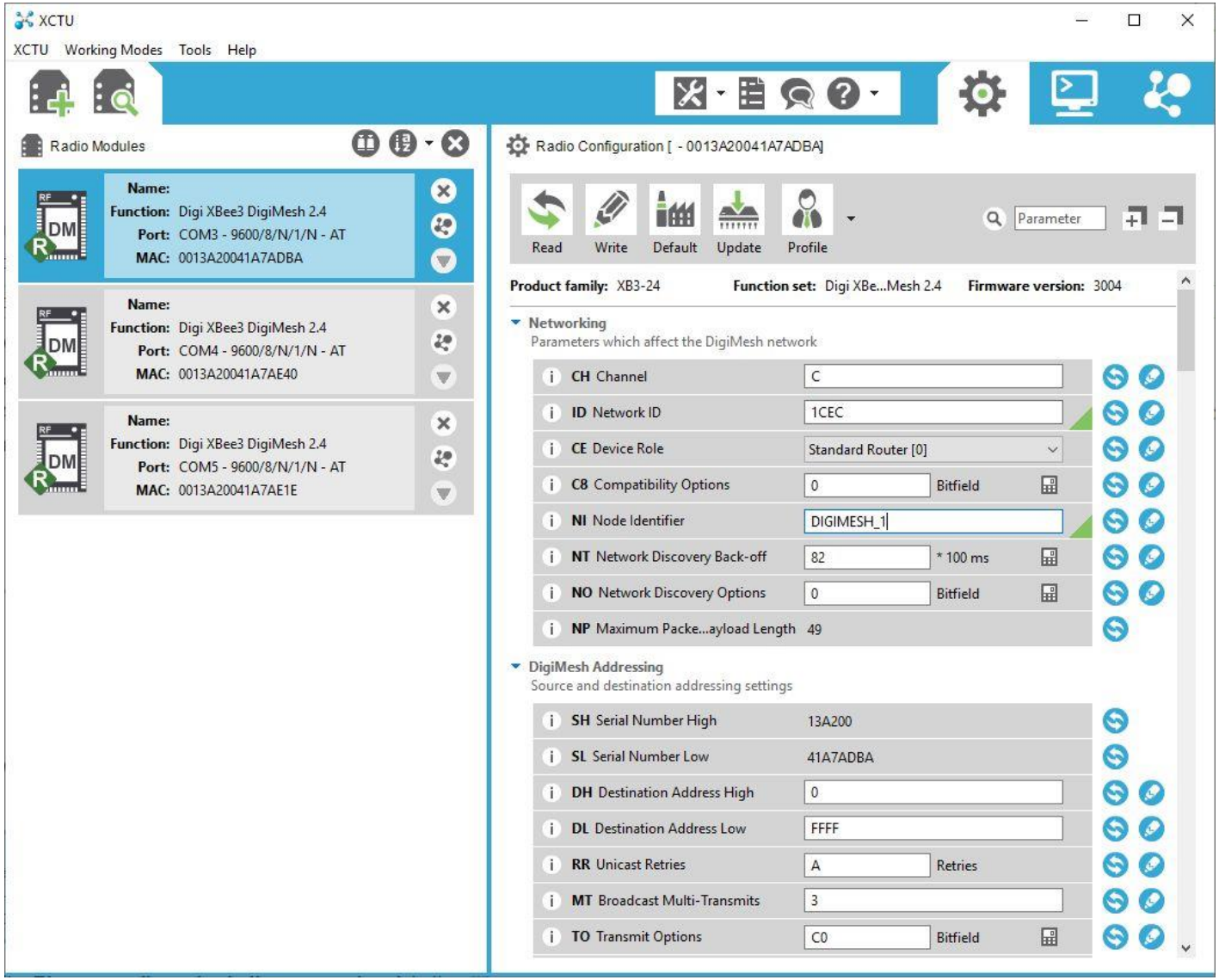
XBee Radio Modules

DigiMesh Basics – Update the XBee Modules



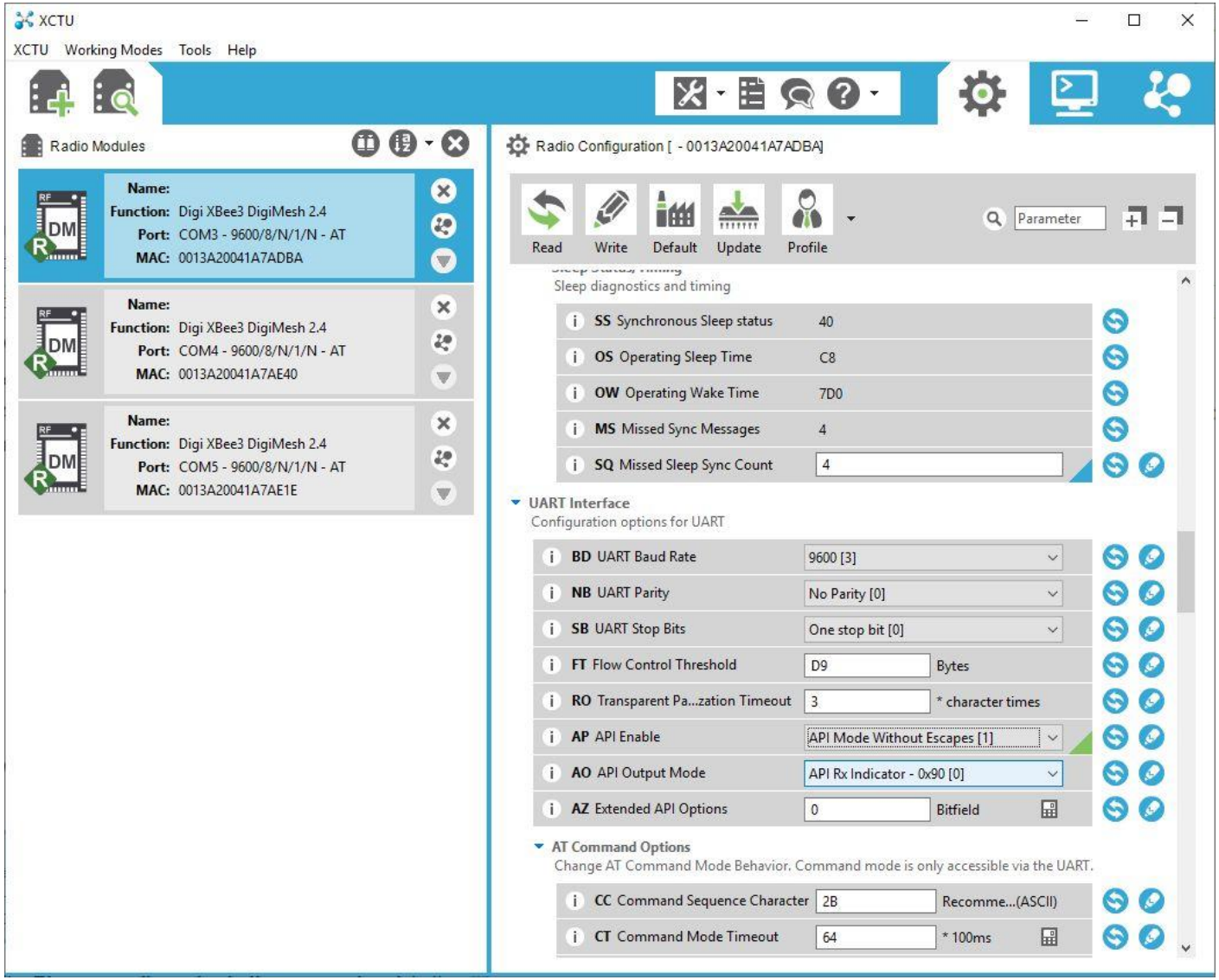
XBee Radio Modules

DigiMesh Basics – Update the XBee Modules



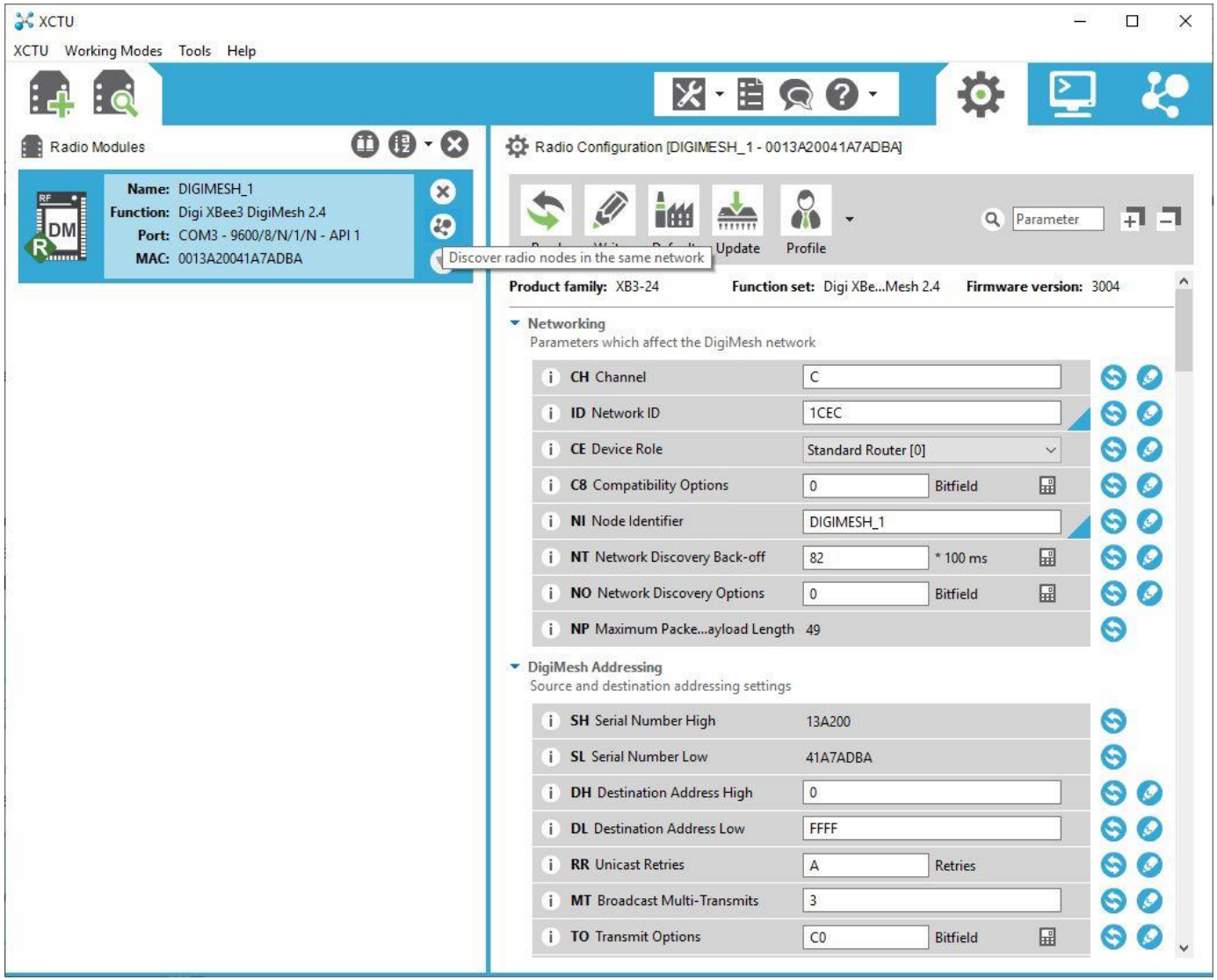
XBee Radio Modules

DigiMesh Basics – Update the XBee Modules



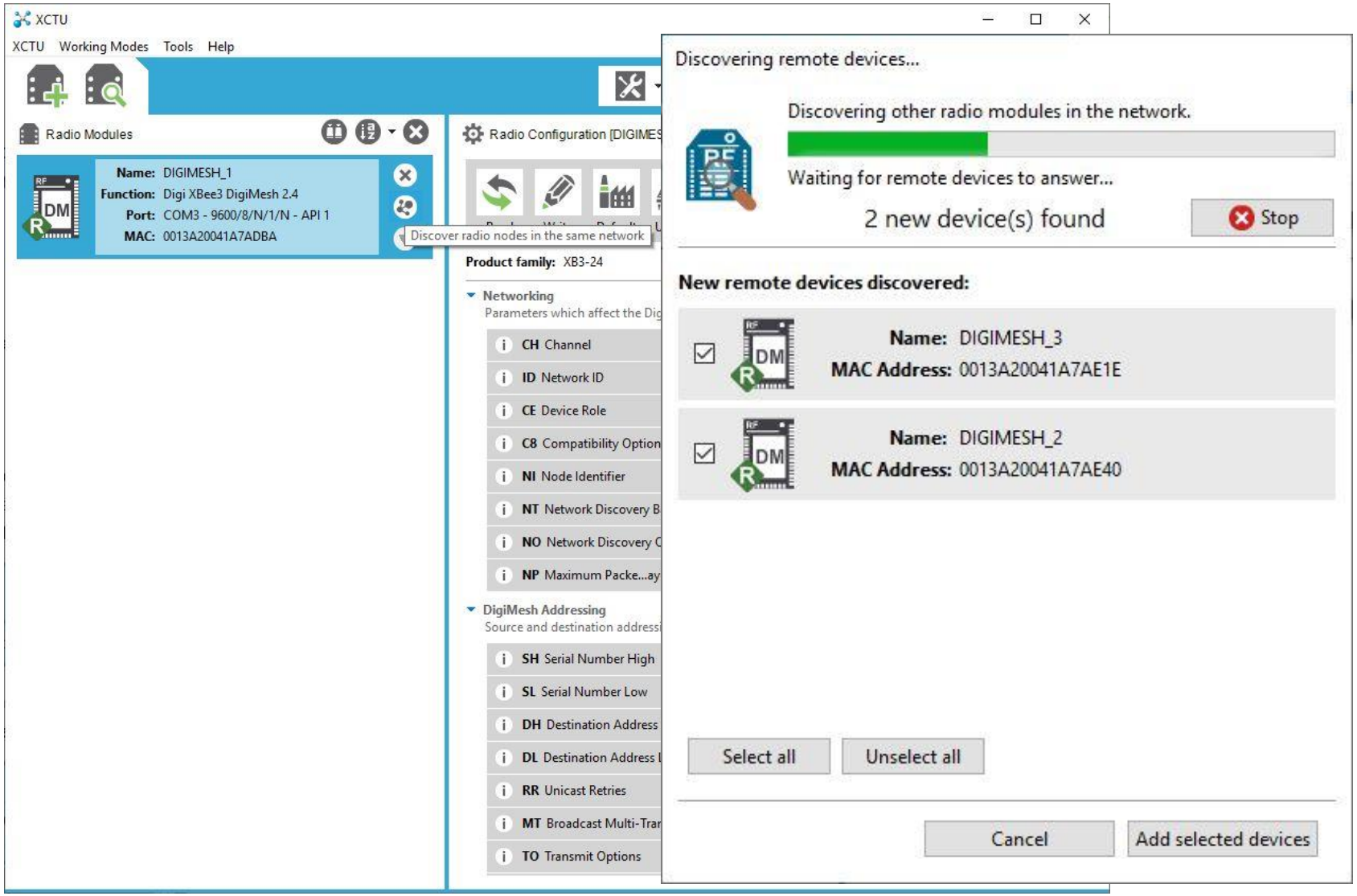
XBee Radio Modules

DigiMesh Basics – Discover Remote XBee Modules



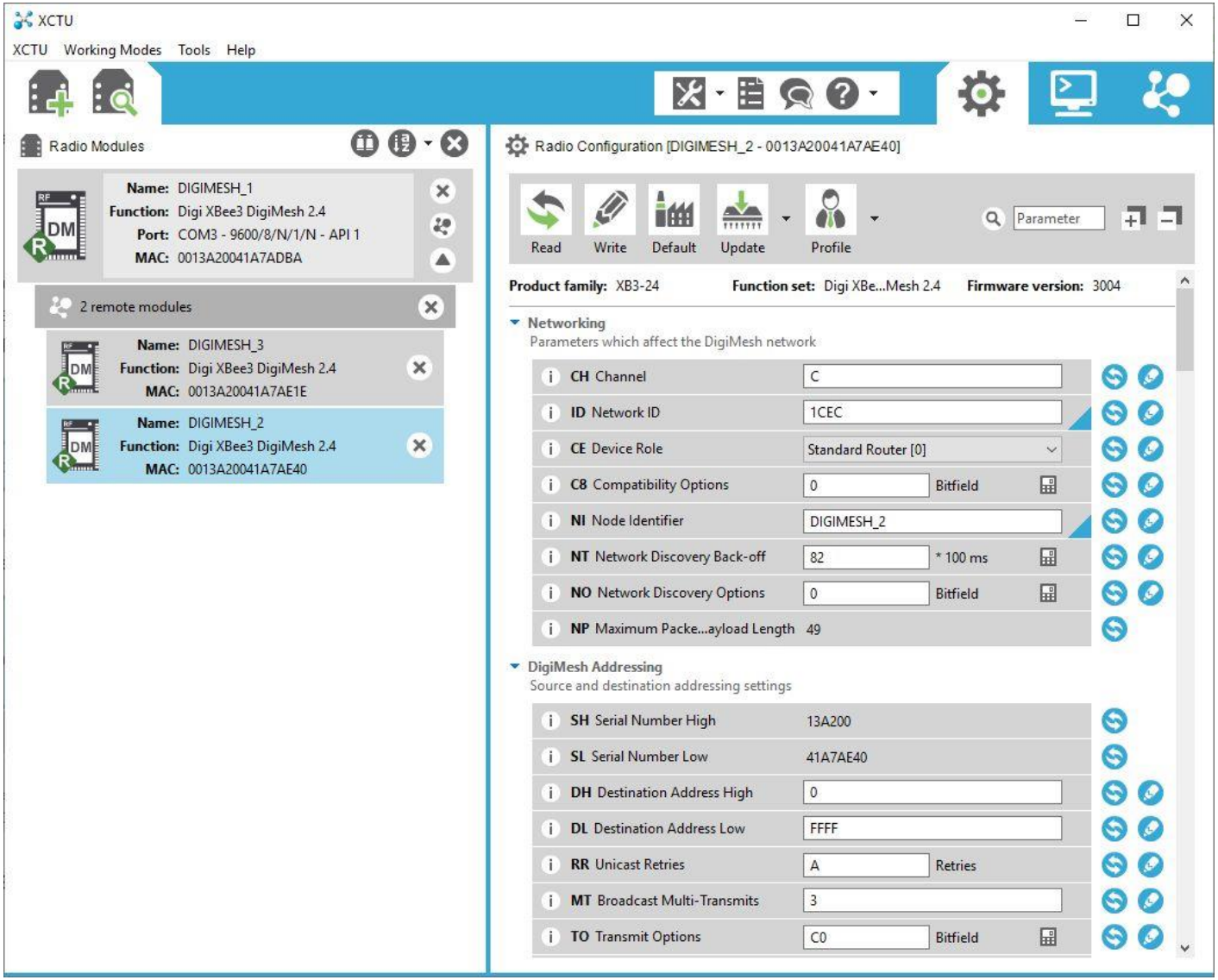
XBee Radio Modules

DigiMesh Basics – Discover Remote XBee Modules



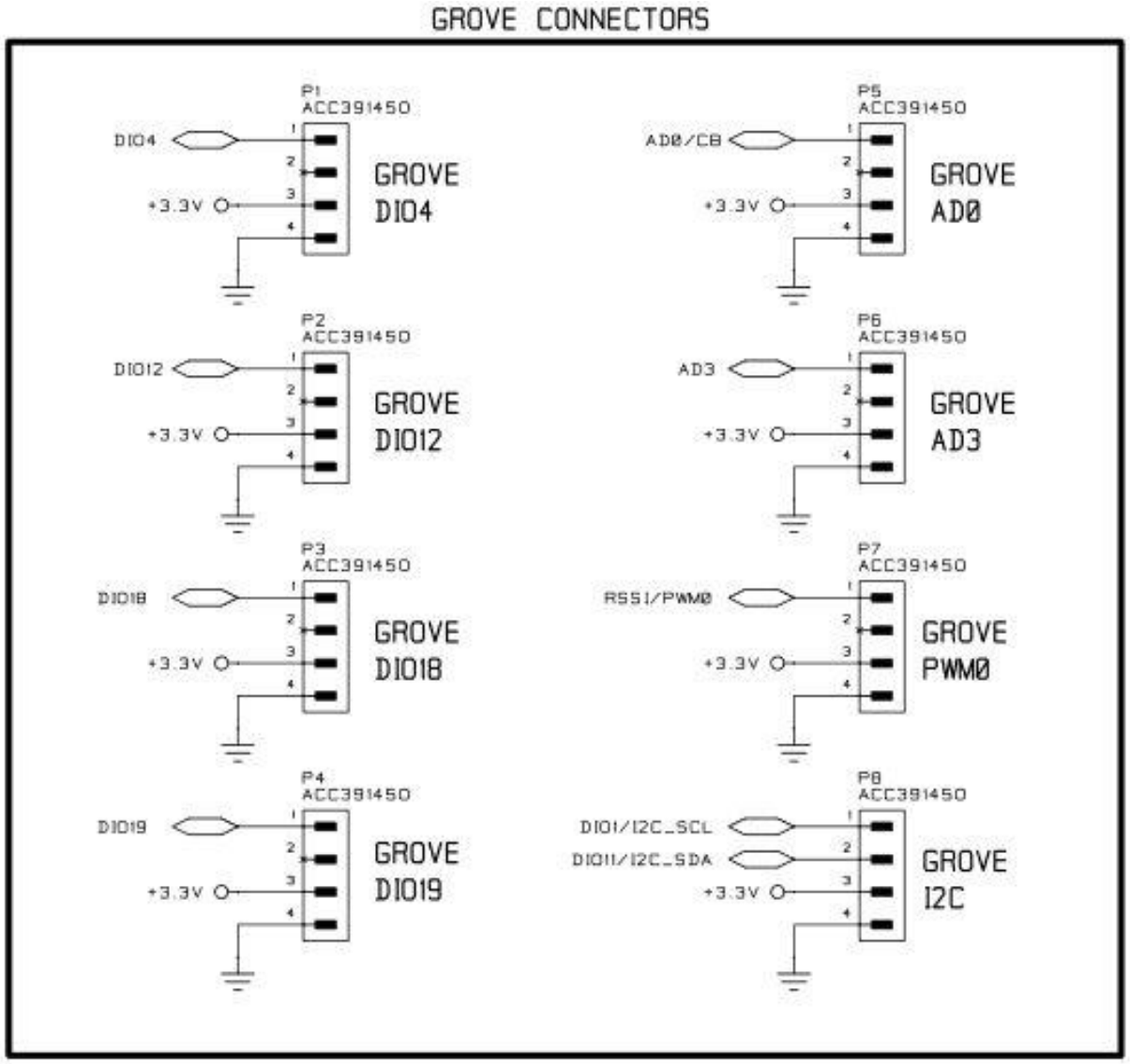
XBee Radio Modules

DigiMesh Basics – Configure Remote XBee Modules



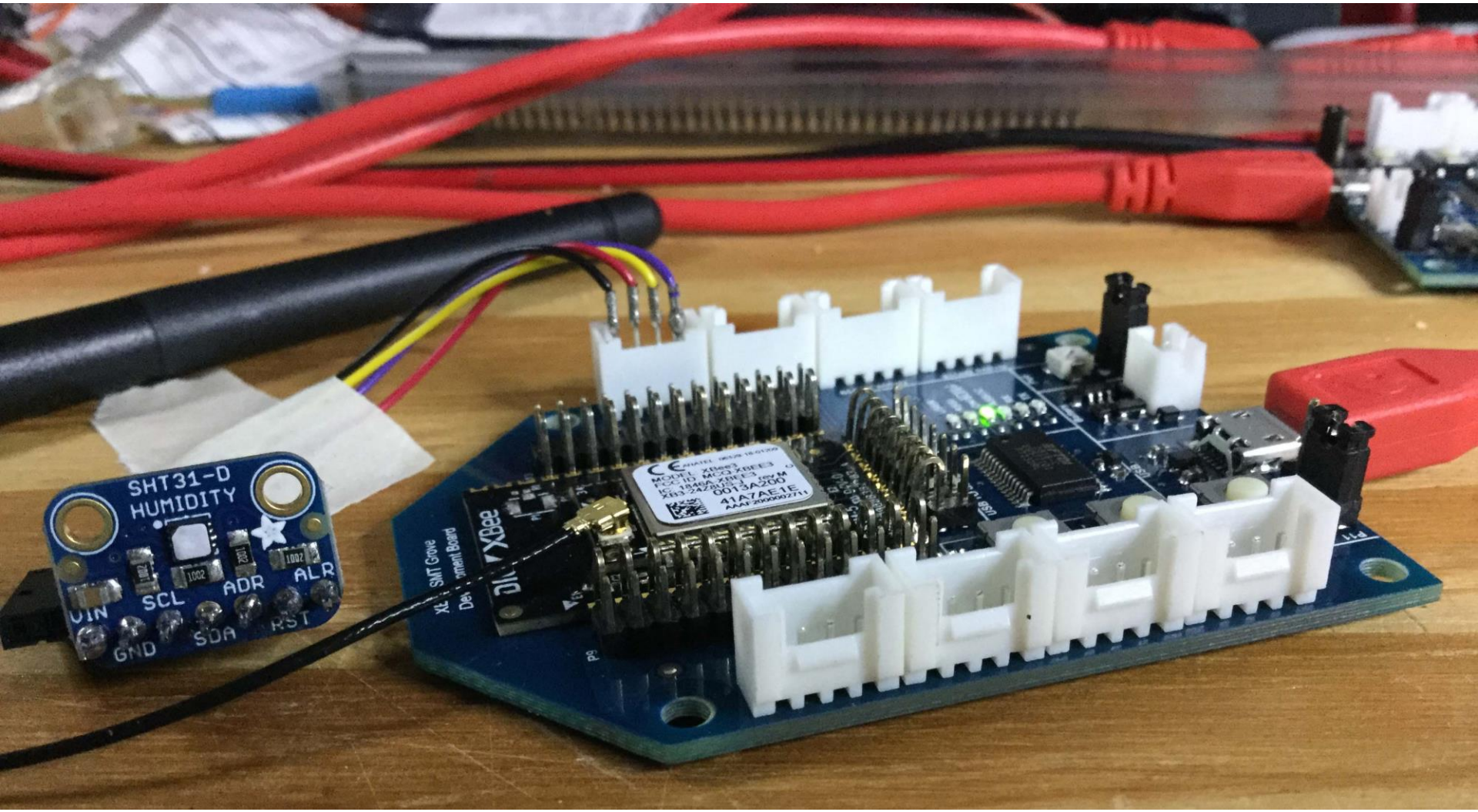
XBee Radio Modules

DigiMesh and MicroPython – Install Temp/Humidity Sensor



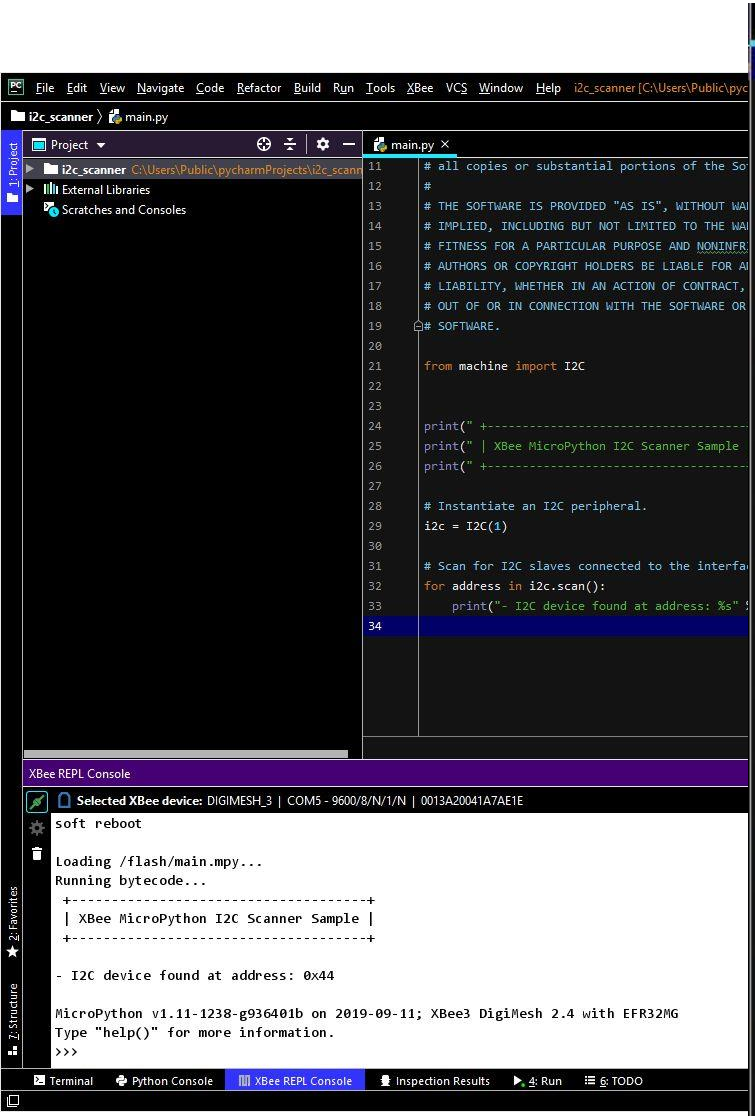
XBee Radio Modules

DigiMesh and MicroPython – Install Temp/Humidity Sensor



XBee Radio Modules

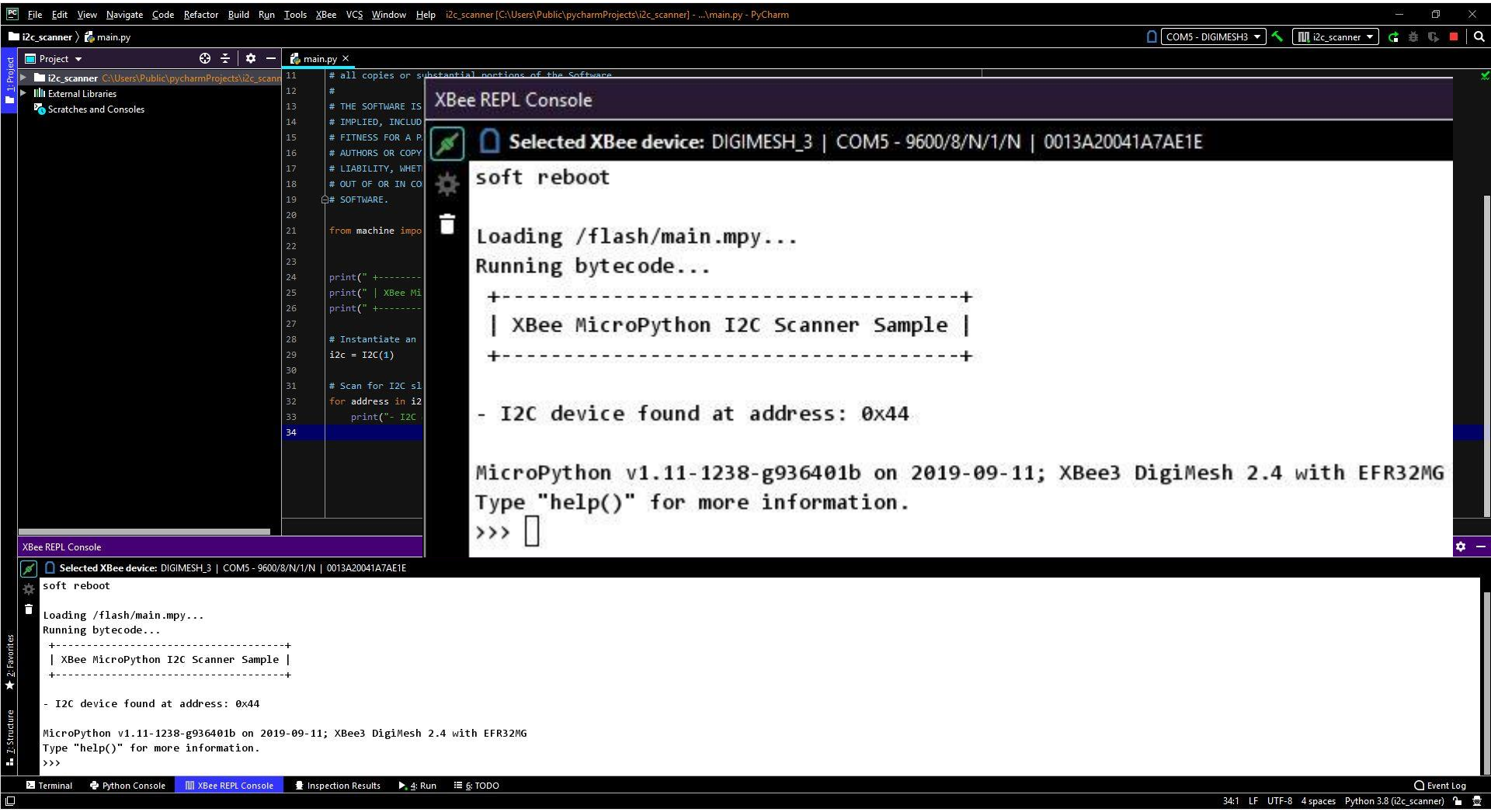
DigiMesh and MicroPython – Install Temp/Humidity Sensor




```
main.py
# Copyright (c) 2019, Digi International, Inc.
#
# Permission is hereby granted, free of charge, to any person obtaining a copy
# of this software and associated documentation files (the "Software"), to deal
# in the Software without restriction, including without limitation the rights
# to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
# copies of the Software, and to permit persons to whom the Software is
# furnished to do so, subject to the following conditions:
#
# The above copyright notice and this permission notice shall be included in
# all copies or substantial portions of the Software.
#
# THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
# IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
# FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
# AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
# LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
# OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
# SOFTWARE.

from machine import I2C


print(" +--------------------------------------+")
print(" | XBee MicroPython I2C Scanner Sample |")
print(" +--------------------------------------+\n")

# Instantiate an I2C peripheral.
i2c = I2C(1)

# Scan for I2C slaves connected to the interface and print their address.
for address in i2c.scan():
    print("- I2C device found at address: %s" % hex(address))

```

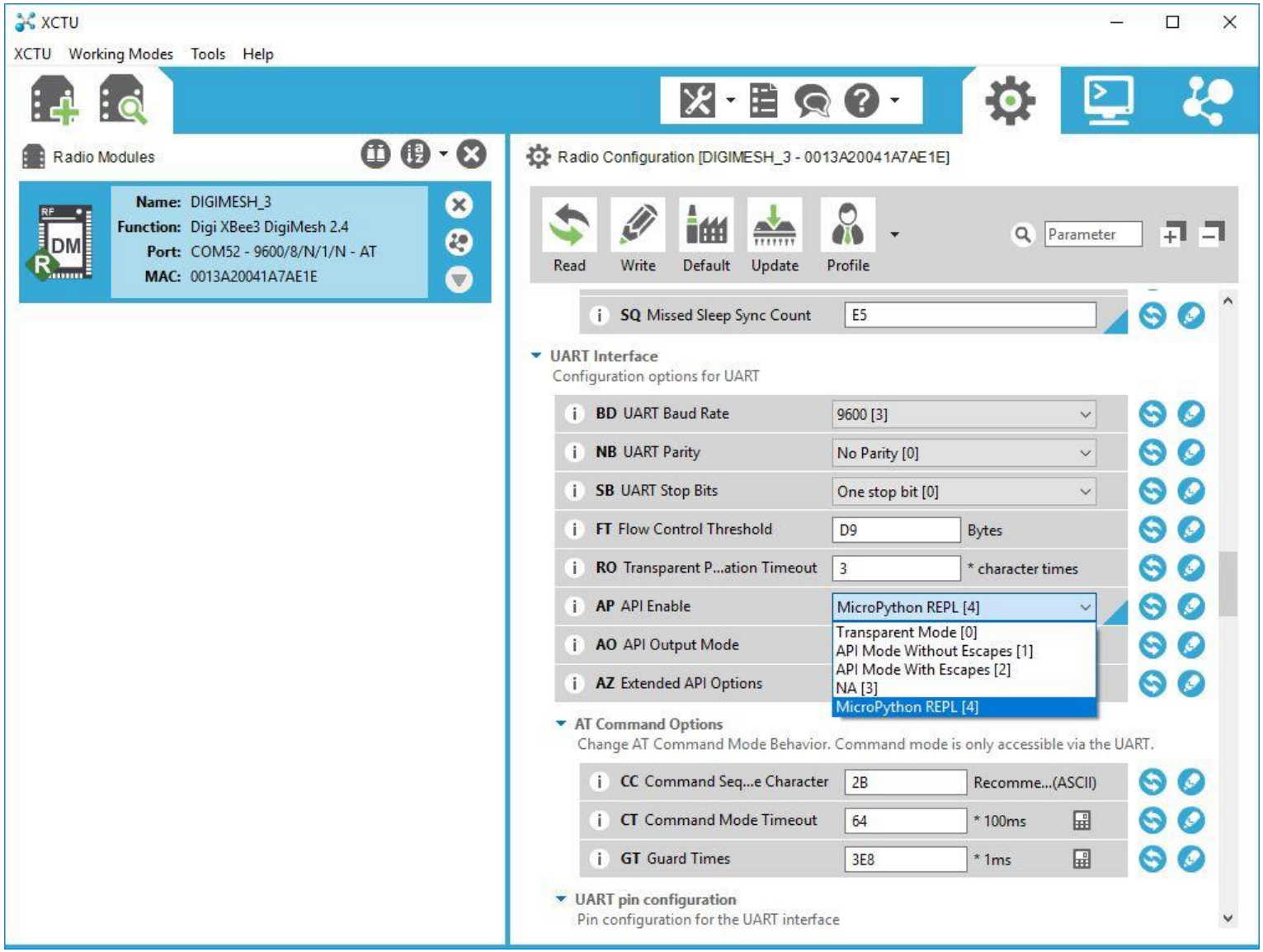
XBee Radio Modules

DigiMesh and MicroPython – Install Temp/Humidity Sensor



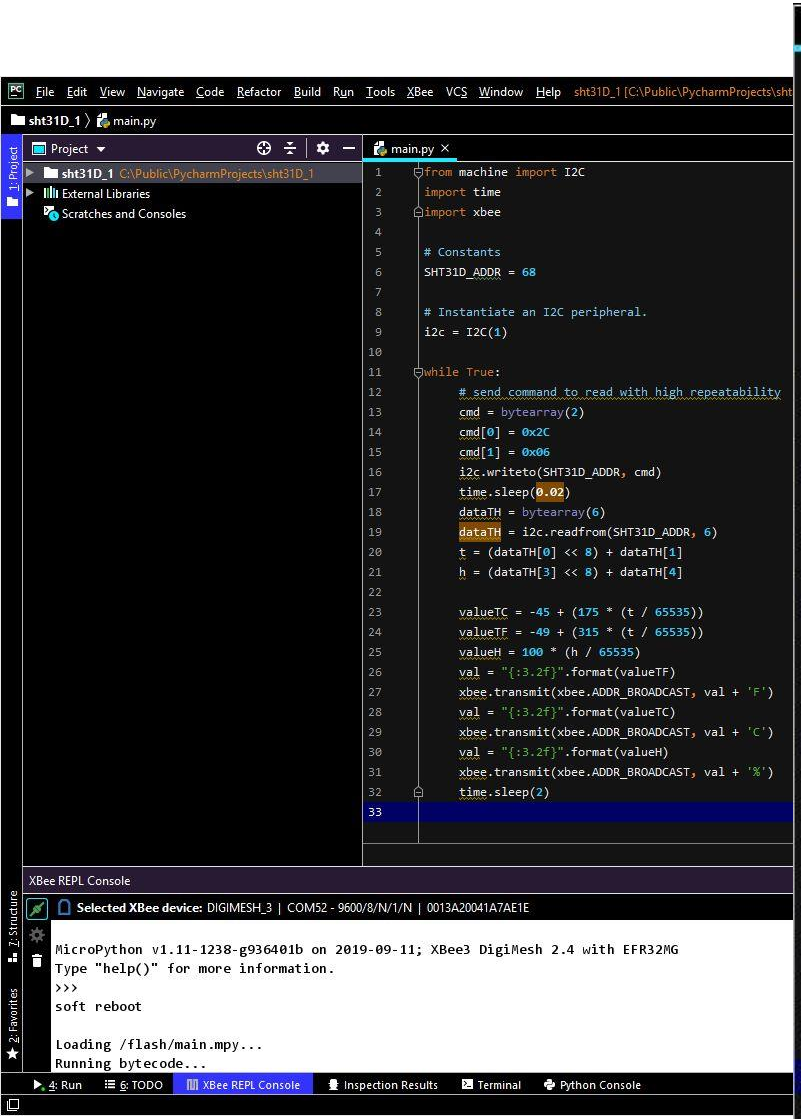
XBee Radio Modules

DigiMesh and MicroPython – Enable XBee MicroPython



XBee Radio Modules

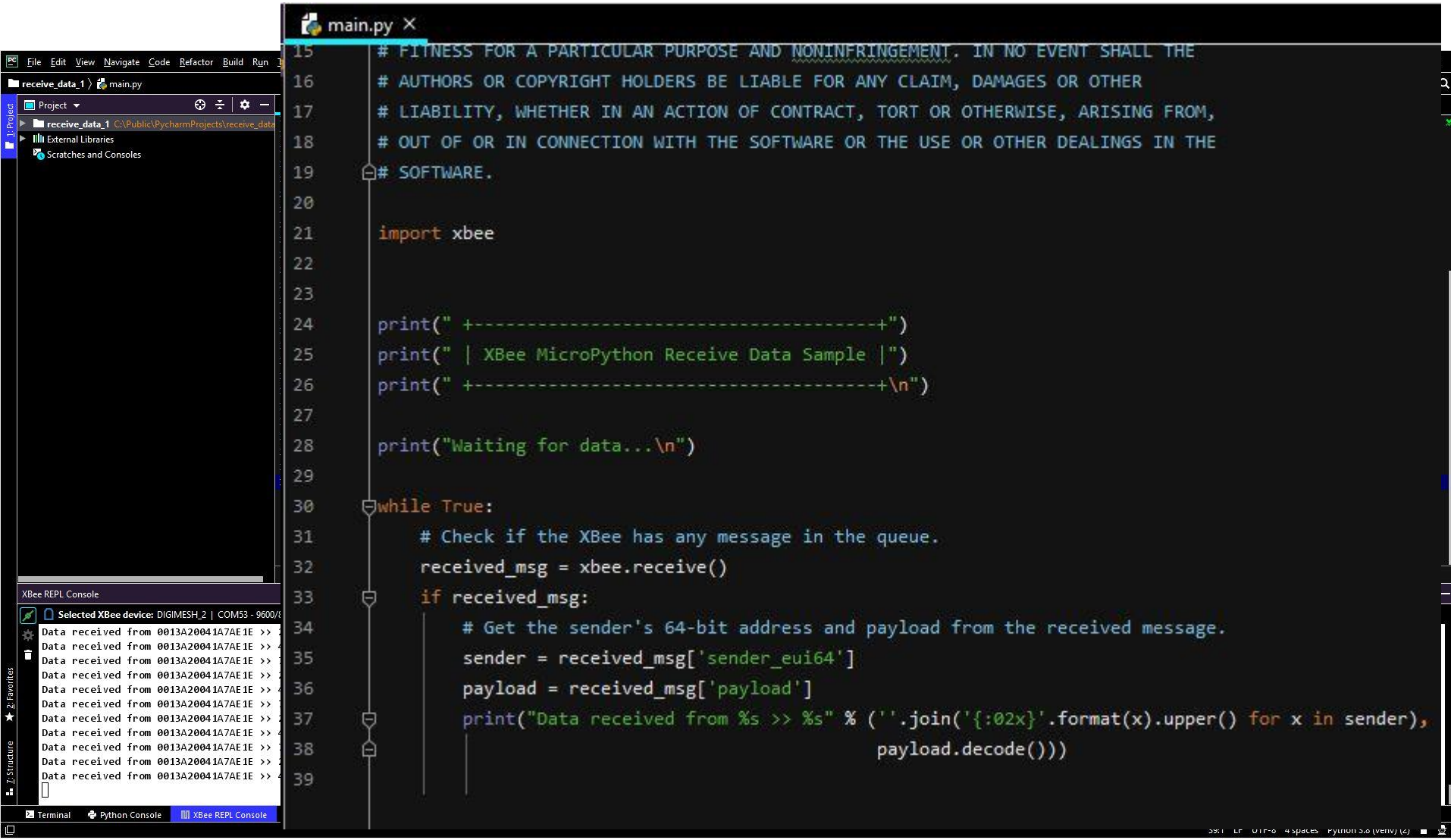
DigiMesh and MicroPython – Sensor Data Transmission




```
main.py
1  from machine import I2C
2  import time
3  import xbee
4
5  # Constants
6  SHT31D_ADDR = 68
7
8  # Instantiate an I2C peripheral.
9  i2c = I2C(1)
10
11 while True:
12     # send command to read with high repeatability
13     cmd = bytearray(2)
14     cmd[0] = 0x2C
15     cmd[1] = 0x06
16     i2c.writeto(SHT31D_ADDR, cmd)
17     time.sleep(0.02)
18     dataTH = bytearray(6)
19     dataTH = i2c.readfrom(SHT31D_ADDR, 6)
20     t = (dataTH[0] << 8) + dataTH[1]
21     h = (dataTH[3] << 8) + dataTH[4]
22
23     valueTC = -45 + (175 * (t / 65535))
24     valueTF = -49 + (315 * (t / 65535))
25     valueH = 100 * (h / 65535)
26     val = "{:3.2f}".format(valueTF)
27     xbee.transmit(xbee.ADDR_BROADCAST, val + 'F')
28     val = "{:3.2f}".format(valueTC)
29     xbee.transmit(xbee.ADDR_BROADCAST, val + 'C')
30     val = "{:3.2f}".format(valueH)
31     xbee.transmit(xbee.ADDR_BROADCAST, val + '%')
32     time.sleep(2)
33
```

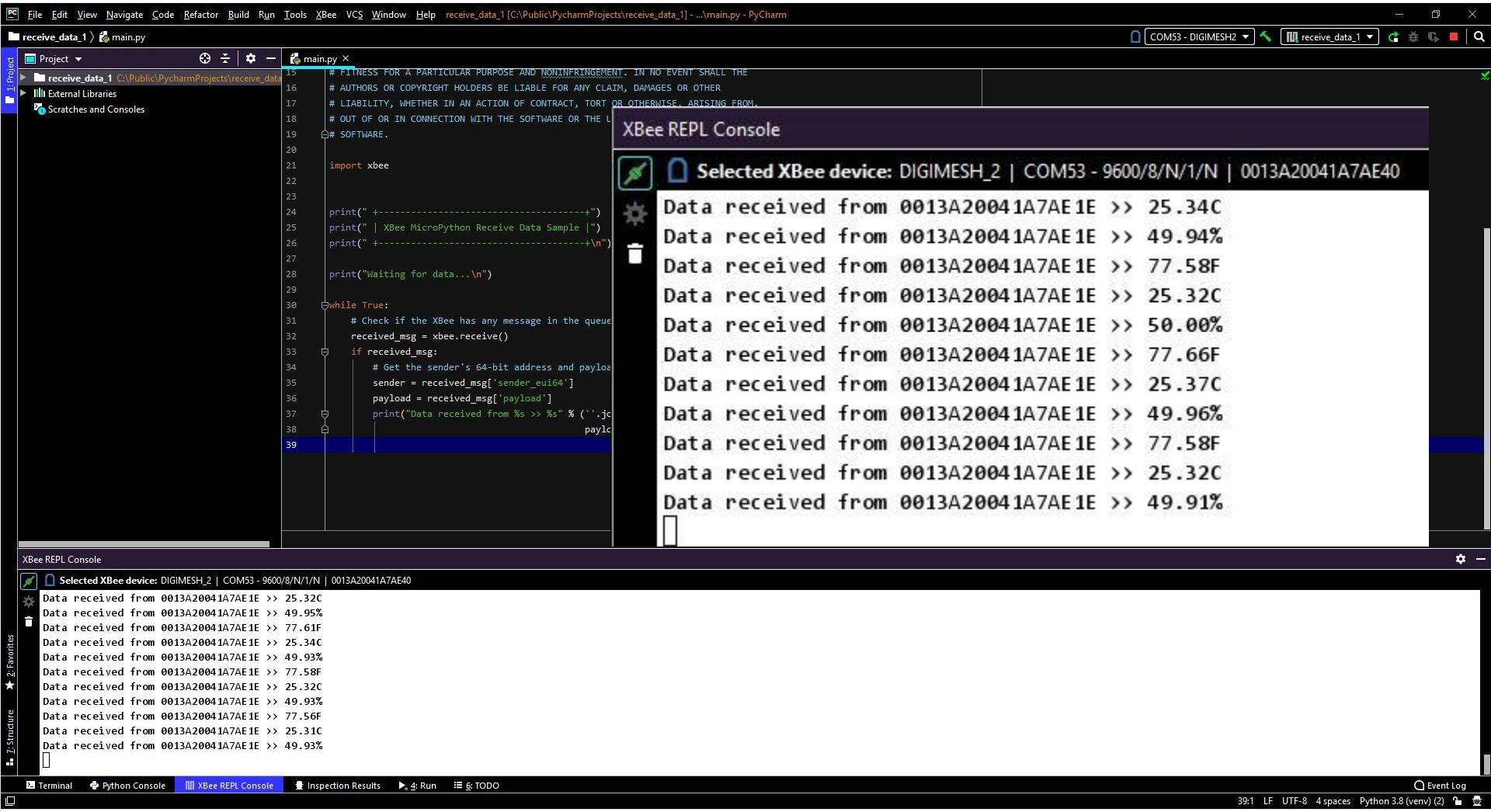
XBee Radio Modules

DigiMesh and MicroPython – Sensor Data Reception



XBee Radio Modules

DigiMesh and MicroPython – Sensor Data Reception



XBee Radio Modules

Day 4 Summary