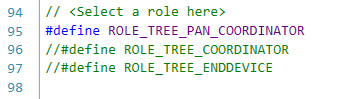
**Instructions with MiWiPRO package ported on SAM R34 LoRa device**

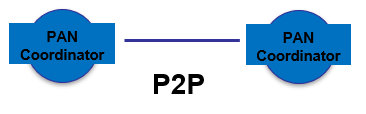
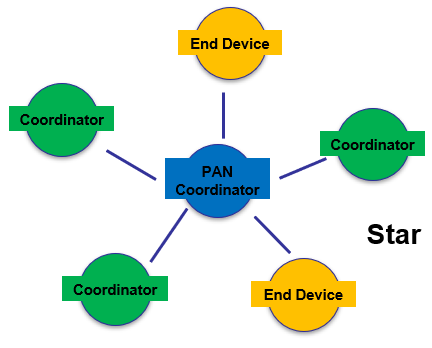
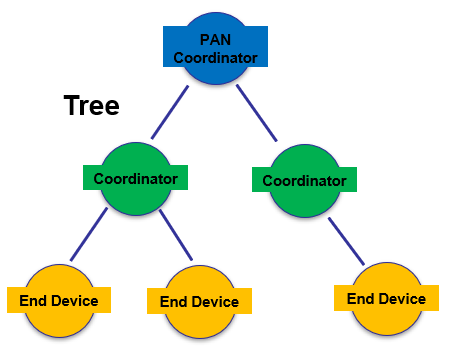
**Device Types**

Role is defined in file: *miwi/inc/Config\_App.h*



1. PC = Pan Coordinator = Fully Functional Device
   1. Device that cannot go to sleep
   2. Device that will start/create the network
   3. Device that will be the parent device for all the sleeping end devices
2. ED = End Device = Reduced Functional Device
   1. Device that can go to sleep
   2. Device that will join an existing network
   3. RFD devices do not allow other devices to join

**Topology supported**

* Peer-to-peer (P2P) topology  
  
* Star topology  
  
* Tree topology  
    
  

**Hardware**

SAMR34 Xplained Pro  
Optionally a WINC1500 Xplained Pro

Software

ED.zip contains the Atmel Studio project for the End Device  
PC.zip contains the Atmel Studio project for the Pan Coordinator  
PC\_WINC1500.zip contains the Atmel Studio project for the Pan Coordinator with Wi-Fi enabled

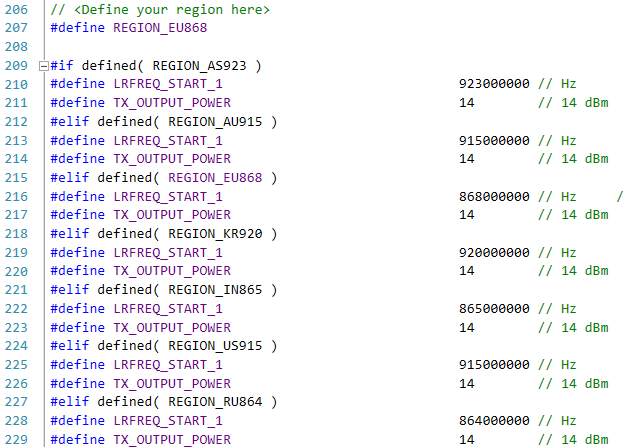
**Instructions**

1. Mark a device as PC and open terminal window TeraTerm corresponding the COM port of the SAMR34 Xplained Pro connected
2. Program the device with the PC Solution shared
3. Mark the other devices ED and open terminal window TeraTerm corresponding the COM port of the SAMR34 Xplained Pro connected
4. Program the device with the ED solution shared

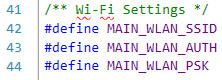
**Demo Notes**

Use ED.zip and PC.zip to demonstrate a local network between a PC and several EDs in Star topology.  
Use ED.zip and PC\_WINC1500.zip to demonstrate a PC to push temperature data received from the EDs to an MQTT broker.  
Use PC.zip to demonstrate P2P topology between 2 devices.

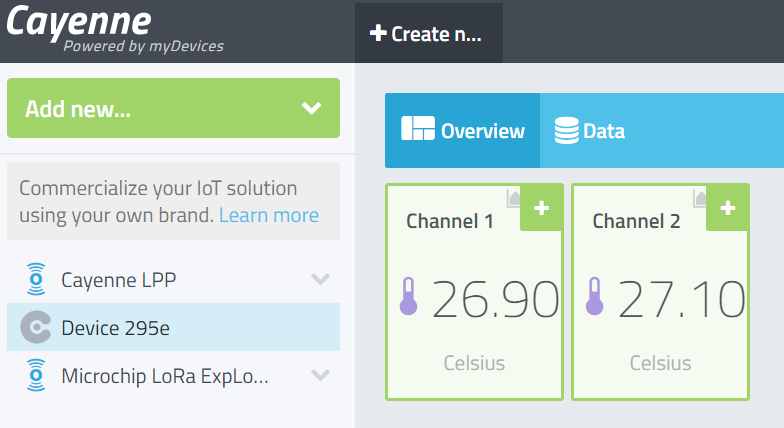
The Sub-GHz Frequency Band can be selected in file: *miwi/tal/sx1276/inc/radio\_registers\_SX1276.h*



The Wi-Fi settings of the router can be configured in *wifi\_app.h*



The MQTT connection parameters can be configured in *wifi\_app.h*

The Wi-Fi demo push the temperature data of the EDs part of the network to Cayenne myDevice broker.  
  


Useful resources

* AN1371 - Microchip MiWi PRO Wireless Networking Protocol  
  <http://ww1.microchip.com/downloads/en/appnotes/01371a.pdf>
* AN1284 - Microchip Wireless MiWi Application Programming Interface MiApp  
  <http://ww1.microchip.com/downloads/en/AppNotes/00001284B.pdf>
* MiApp Interfaces  
  <https://documentation.help/MiWi-Development-Environment/MiApp_Interfaces.html>

**Limitations**

The current package does not support:

* Non-volatile memory (NVM) module to store network information
* Network Freezer (ENABLE\_NETWORK\_FREEZER)
* Security module for data encryption/decryption (ENABLE\_SECURITY)
* Random PAN ID (MY\_PAN\_ID 0xFFFF)
* Automatic Handshake (ENABLE\_HAND\_SHAKE)
* Indirect message (ENABLE\_INDIRECT\_MESSAGE)

Do not have multiple FFD devices programmed and operating on same PANID and channel. This will confuse the end devices on which node to join.  
Resetting the FFD device will require rejoin/reset at the end devices as Network Freezer is not supported