

# Replacing Obsolete RedPine Signals Wi-Fi Module With ESP32 Module



## CUSTOMER

**Chilicon Power** manufactures microinverter and monitoring systems for rooftop solar that is made in USA. Chilicon Power has designed the highest efficiency microinverter in the world with built-in long-term reliability thanks to the use of the most reliable type of capacitors (contrary to some competitors that use electrolytic capacitors which are known to fail early).



## INDUSTRY

Solar Energy

## CHALLENGE

Chilicon Power develops solar energy systems that include, apart from solar panels, a monitoring & communication gateway. This device used the RedPine Signals RS9110-N-11-24-02 Wi-Fi module, which had been discontinued, blocking the production of gateways, and threatening the supply of equipment to Chilicon Power customers.

## SOLUTION

The Grovety team started the project by investigating the current solution. The old module was controlled via the SPI channel. We found out that even though the module had a complete TCP/IP stack, it was used only as a transmitter, and the network stack was deployed using the lwIP library on the LPC1788 controller itself. We completely removed this cumbersome library, wrote a UART Driver, and started to use the network layer of the ESP32 WROOM-U module, limiting the microcontroller's firmware to control commands only. The network stack in the ESP32 module, being hardware-based, has much more stability and speed.

## RESULT

The device firmware has been modified, microcontroller memory freed up, end-of-life component issue avoided. The new modules are cheaper and are available in large quantities from suppliers' warehouses.

## TOOLS & TECHNOLOGIES

- C/C++
- FreeRTOS
- TCP/IP, DNS, SSL, LwIP
- LPC1788, ESP32
- MCUXpresso

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