General installation

1. Install compiling tools:
   ```
   sudo apt install binutils bzip2 diff find flex gawk gcc-6+ getopt grep
   install libc-dev libz-dev make4.1+ perl python3.7+ rsync subversion unzip
   which zstd
   ```
2. Download OpenWRT repository and enter directory:
   ```
   git clone https://github.com/ru-tran/openwrt-23.git openwrt
   cd openwrt
   ```
3. Add agent sources to the feed links:
   ```
   cp feeds.conf.default feeds.conf
   echo "src-git-full twlc git@github.com:ru-tran/feeds.git;main" >> feeds.conf
   ```
4. Update and install feeds:
   ```
   ./script/feeds update –a
   ./script/feeds install –a
   ```
5. Architecture and build configuration:
   ```
   make menuconfig
   ```
   - “Target System” --> “x86”
   - “Subtarget” --> “x86_64”
   - “Target Profile”--> “Generic x86/64”
6. Configuration packages:
   - Go to “Firmware” tab, add there “ath11k-firmware-qcn9074", add all packages by setting there a <*>, not <M>.
   - Add “Kernel modules” --> “WIreless Drivers” --> “kmod-ath11k-pci”
   - Add “Network” --> “WirelessAPD” --> “wpad-mesh-openssl”
   - Add “Network” --> “iw-full”,”ppp”,”ppp-mod-pppoe”
   - Add “LuCI” --> “Collections” --> “luci”
   - Add “LuCI” --> “Libraries” --> “luci-lib-ipkg”
   - Add every point at “Network” --> “TWLC”
   - Save configuration while exiting menu configuration window.
7. Compilation:
   ```
   make download
   make –j<amount of threads to compile + 1>
   # for higher verbosity:
   make -j1 V=s
   ```
8. Image installation:
   After compilation is ended, image will be stored at the directory by path openwrt/bin/targets/x86/64. Image will be at the .img.gz format. UpSquared has UEFI bootloader, so we need EFI-bootable image, which has efi at his name.
9. Extract disk image:
   ```
   tar –xzfv <filename>
   ```

10. Connect your USB-stick or any other storage to install OpenWRT there.
11. Find your device using lsblk command. Then flash it using dd util:
    `dd if=<path to openwrt image file> bs=1M of=/dev/<storage device, usually sda>`

Notes and resources

- You can download config from the repo's releases tab and skip steps 5-6. Make sure you've run "make defconfig", before building an image.
- After initial flashing, you can use sysupgrade utility to flash new images.
- OpenWRT official guides: https://openwrt.org/docs/guide-developer/start