

**cProduct:** Realtek OpenWRT SDK  
**Version:** **V2.4**  
**Date:** **July 24, 2015**

## **Description:**

*Realtek provides WiFi Router/AP SDK based on OpenWRT framework. The firmware could be adopted in Realtek EV (evaluation) board, or platforms designed according to Realtek reference circuit.*

*The following sections will describe the hardware requirements, features, to-do list, and the release history.*

## **Hardware Supported:**

### **Realtek 11n FE Router/AP EV board:**

- *RTL8198C + embedded Giga switch*
- *RTL8954E + embedded Giga switch*
- *RTL8197DL + embedded 10/100M switch*
- *RTL8197DN + 8367R Giga Switch*
- *RTL8196D + embedded 10/100M switch*
- *RTL8881AQ/AN + 10/100M embedded switch*
- *RTL8881AB + 8367R Giga Switch*
- *RTL8196E + 10/100M embedded switch*

## **Hardware limitation:**

→ 98C/8954E platform

- *8M bytes flash , 64M bytes DRAM is minimum requirement for OpenWRT SDK.*
- *16M bytes flash is minimum requirement for OpenWRT SDK Dual Image support*

→ 97D/96D/8881A/96E platform

- *8M bytes flash , 64M bytes DRAM is minimum requirement for OpenWRT SDK.*
- *16M bytes flash is minimum requirement for OpenWRT SDK Dual Image support*

## **OpenWRT version:**

- *OpenWRT v14.07 BarrierBreaker (r42889)*
- *Linux kernel : v3.10.49*

## **Features :**

- *802.11 a/b/g/n AP mode support*
- *2.4G/5G Dual Band support\**
- *80211.ac mode (VHT80)\**
- *Multiple SSID support/ Client mode / Repeater mode / Ad-hoc mode*
- *Open system support , WEP support*
- *WPA TKIP and WPA2 AES/Mixed mode for PSK*
- *802.1x Radius support for AP mode*
- *WPS support*
- *WDS support*

- Wifi 5M/10M bandwidth control
- Wifi Auto channel (hostapd-based)
- Wifi Direct support
- PSD control API and Channel utilization information report support
- Firmware upgrade support
- Support Linux InputButton/LEDs device based GPIO driver
- Swconfig support
- USB2.0/USB3.0 ,OTG support\*
- SATA support\*
- Dual Image support
- HW watchdog support
- Nand flash support\*
- Gpio-button-hotplug support
- Proprietary High performance filesystem module (NTFS/exFAT/HFS+)
- Bluetooth support\*

*\* Depend on HW platform*

## Release History:

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### **\*\* Realtek OpenWRT SDK v2.4 – July 24, 2015 \*\***

#### *Change Log*

- Refine for NAND flash support
- Add fast NAT and hardware Multicast/NAT support
- Fix some USB OTG driver issue
- Wifi driver changed as:
  - Add 8814AR and 8194AR support
  - Ad-Hoc Mode Support 40M|80M & 11N|11AC
  - Fix client mode rate adaptive function working abnormal issue
  - Fix some universal repeater mode issues
  - Add 8192ER LNA type selection in menu config
  - Fix WDS bandwidth wrong issue in 11ac mode
  - Update rate adaptive function and some settings to improve 8192ER and 8188ER performance
  - Update rate adaptive function to improve 8812AR and 8881A performance
  - Add 8881AM 2 layer board support
  - Modify 92E CCK Cyclic Delay Diversity setting
  - Fix some function\_off function issues
  - Fix WAPI group key not working when MBSSID is enabled
  - Fix antenna diversity function not working for station connected in vxd or vap interface

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### **\*\* Realtek OpenWRT SDK v2.3 – Nov 21, 2014 \*\***

#### *Change Log*

- Upgrade SDK version to base on “OpenWRT v14.07 barrierbreaker”
- Upgrade linux kernel to v3.10.49
- Enable CPU L2 cache function(98C only)
- Fine-tune Samba performance
- Add Proprietary High performance filesystem module (NTFS/exFAT/HFS+)
- Fix 5281(9xD/8881A) toolchain bug to support NPTL
- Gpio driver bug fix to support gpio-button-hotplug module

- *32M flash support(98C only)*
- *Add Bluetooth support(98C/8881A only)*
- *Wifi driver changed as:*
  - Fix antenna diversity function not working for station connected to virtual interfaces
  - Fix WiFi logo test failed item 4.2.5, 4.2.10, 4.2.47, when station enter power save mode, ping test will fail (for 8192E, 8881A, 8188E, and 8812)
  - Fix 8812 and 8881A frequency deviation issue when doing power tracking for large temperature difference (induced from previous version, v2.2)
  - Improve stability of throughput test for 8812
  - Add external LNA support for 8188E
  - Modify client mode group-key re-key function to support 2 group keys and fix MIC error issue with Apple AP for 8188E pure client mode
  - Fix TRX antenna diversity setting issue for 8188E
  - Add internal PA support for 8881AM and 8881AB
  - Add TRX antenna diversity support for 8881A selectable configuration
  - Update adaptivity function to v7.1 for new test conditions
  - Fix pure WDS mode low throughput issue (for 8192E)
  - Fix TRX antenna diversity setting issue with external LNA (for 8192E)
  - Add PA support of RTC5633 and RTC5634 for 8881AN
  - Fix throughput unstable and beacon missing issues when Tx beamforming is enabled (for 8192E)
  - Add dynamic bandwidth switching function for 5G band
  - Fix WiFi logo test failed item 4.2.25-T06
  - Fix low Rx sensitivity issue for 8188E while MP mode
  - Support DFS function base on Cfg80211 architecture
  - Support auto channel selection by Hostapd
  - Fix repeater mode connectivity lost issue

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**\*\* Realtek OpenWRT SDK v2.2 – June 30, 2014 \*\***

*Change Log*

- *Nand flash support (98C/97D/8881A)*
- *512M DRAM support (98C only)*
- *USB3.0 phy setting fine-tune*
- *Linux watchdog device support*
- *5281/4181(97D/8881A/96E) toolchain bug fix*
- *Eth driver rx IP checksum offload support*
- *Fix 256M DRAM memory access issue (8881A/97D)*
- *Force LUCI version to v0.11 (latest stable release)*
- *98C SMP affinity and RPS setting fine tune for better performance*
- *Fix 98C switch LED not working issue*
- *Wifi driver changed as:*
  - *Wifi Direct support*
  - *Auto channel support (hostapd-based)*
  - *Disable PCIe spread spectrum when using 8192E*
  - *Fix WiFi logo test failed item 4.2.47 for 8812 and 8192E*
  - *Fix Tx beamforming not working when MBSSID is enabled for 8812 and 8192E*
  - *Fix CCK power degraded issue for 8192E high power board when power tracking is not enabled*
  - *Fix NSS1 MCS0-MCS3 tx power too large issue for 8812 1T1R mode*
  - *Update power by rate and power limit table for 8192E high power board to avoid burning PA*
  - *Modify adaptivity function for new test plan*
  - *Add RF IQ calibration for 8192E high power board to improve performance*

- *Disable “Improve more power save in idle mode for 2-receiver devices” by default (can be manually enabled by mib)*
  - *Fix 8192E client mode long connection time issue in channel 11 and 40M mode*
  - *Fix system crash issue when doing traffic with more than 8 stations*
  - *Fix WiFi logo test failed item 4.2.25*
  - *Fix Tx power setting error when repeater mode is enabled*
  - *Fix throughput degrade issue when doing long run test*
  - *Fix Wlan LED is not blinking according to calibration value*
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**\*\* Realtek OpenWRT SDK v2.1 – Mar 14, 2014 \*\***

*Change Log*

- *Add 8198C/8954E SOC support*
  - *Add 8196D SOC support*
  - *Upgrade linux kernel version from v3.10.28 to v3.10.32 (OpenWRT trunk)*
  - *Wifi Driver performance and stability fine-tune*
  - *Fix 5281/4181 rsdk toolchain issue for building some package that need “err” uClibc function*
  - *flash utility support to initialize signature while not calibrated*
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**\*\* Realtek OpenWRT SDK v2.0 – Mar 07, 2014 \*\***

*First v2.0 Release*