

Infineon Linux Wi-Fi driver (FMAC) release notes

About this document

Scope and purpose

Thank you for your interest in Infineon's Linux Wi-Fi driver (FMAC). This document provides an overview of the new features, bug fixes, and known issues for the AIROC™ Wi-Fi chips (CYW4373, CYW43012, CYW43439, CYW54591, CYW43022, and CYW5557X) on the current release for Linux.

Intended audience

This document is intended for anyone who uses the Infineon AIROC™ Wi-Fi Combo Chips on a Linux host.



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Overview

1 Overview

1.1 High-level summary

This document details the new features and bug fixes for CYW4373, CYW43012, CYW43022, CYW43439, and CYW5557X on the software release.

This software release includes the following:

- FMAC driver
 - [ifx-backports](#) GitHub page
- Firmware and Clm blob
 - [ifx-linux-firmware](#) GitHub page
- Supplicant and hostapd
 - [ifx-hostap](#) GitHub page

All the above files can also be found in the Infineon [Developer Community](#) page.

- To bring up Wi-Fi with FMAC on RPI host for kernel 6.1.21, download the patches from the Infineon [Developer Community](#) page.
- To bring up Wi-Fi with FMAC on EA iMX8 Nano host for kernel 6.1.36, download the patches from the Infineon [Developer Community](#) page.
- To bring up Wi-Fi with BRCMFMAC on a non-RPI host for kernel 6.6, download the patches from the Infineon [Developer Community](#) page.

1.2 Device firmware change summary

Table 1 Device firmware change summary

Device	SDIO	PCIe
CYW4373	Bug fixes	NA
CYW43012	Bug fixes	NA
CYW43022	NA	NA
CYW55572/CYW55571/CYW55573	Bug fixes	Bug fixes
CYW43439	Bug fixes	Bug fixes

Note: Contact the local Infineon Technologies distribution channel (FAE or local sales representative) to get the latest hardware, NVRAM, and software files.

Overview

1.3 Device firmware revision details

Table 2 Firmware revision details

Device	Wi-Fi firmware version	
CYW4373	PCIe	13.35.205.90
	SDIO	13.10.246.343
	Industrial	13.10.246.343
	USB	13.10.246.343
CYW43012	SDIO	13.10.271.319
CYW43022	SDIO	13.34.107.121
CYW55572/ CYW55571/CYW55573	PCIe	18.53.366.19
	SDIO	18.53.366.19
CYW54591	PCIe	13.35.347
	SDIO	13.35.347
CYW43439	SDIO	7.95.86

Description of changes

2 Description of changes

This section explains the features, enhancements, and issues that may have an impact on various devices.

2.1 Driver - FMAC changes

- Support for kernel 6.6+
- Support for CYW43022
- Support for 6G scan enhancement
- Fix to handle system crash on UDP traffic during Deep Sleep
- Fix for configuring iovar setting for during multiple BSS scenarios
- Fix for Rx throughput improvement
- Fix for ping delay noticed in P2P auto GO scenarios

2.2 Hostapd/supplicant changes

- Support for DPP2.0 and enablement of PFS flow on event update.
- Updated AKM value on 11w MFP flag enabled.
- Reset authentication and encryption parameters in hostapd while handling roam event.
- Add a configurable link_loss parameter for background scan.

Note: For commercial SAP use on an IoT device, we recommend launching the AP with DTIM_PERIOD as 1. dtim_period=1 in hostapd.conf.

Description of changes

2.3 Firmware changes

2.3.1 CYW4373

New features

Component	Description	Implication/advantage
Wi-Fi	NA	NA

Wi-Fi certification

Chipset	WFA program supported
CYW4373	11n, 11ac, PMF, P2P, and vulnerability

Bug fix

- Fix for ping loss issue with powersave enabled in device.
- Fix for connectivity issue with device in WPA2 security and AP configured with WPA3/WPA2.
- Fix for PAPD optimization.
- Fix for USB suspend and resume issues.
- Fix for Low-Power mode in suspend mode reducing lower V_{Bat} current.
- [Soft AP]Fix for internal SAE for ignoring commit messages of rejected group IE.
- Fix for invalid RSSI report failure noticed in the 5 - 20 MHz band.
- [Soft AP]Fix for handling reassociation request with PMKID.
- [Soft AP]Fix for low throughput noticed with SoftAP scenarios.
- [Intermittent]Fix for CYW4373 USB enumeration failure.
- Fix for Throughput/ping loss failures noticed with WLAN powersave.

Known issues

N/A

Description of changes

2.3.2 CYW43439

New features

Component	Description	Implication/advantage
Wi-Fi	NA	NA

Wi-Fi certification

Chipset	WFA program supported
CYW43439	WPA3 (SCV, TLS 1.3)
	11n, PMF, P2P, and vulnerability

Bug fix

- WFA certification :
 - WPA3: Test case : 4.2.2 - Fix for missing H2E only in WPA3 AP.
- Fix for MFP support in SoftAP mode with WPA3 transition mode.
- Fix for connectivity issue with the device in WPA2 security and AP configured with WPA3/WPA2.
- Fix for regulatory power issues in 2.4 GHz.
- Fix for ETSI Rx blocking test in 11g scenario.
- Fix for invalid BSSID address with WPA3 SoftAP on WLAN interface reset.
- [SoftAP]Fix for association failures with AP configured to WPA3/WPA2 transition security.
- [SoftAP]Fix for stability issues noticed on SoftAP interface reset.
- Fix for missing RSNX Information element as part of association request.

Known issues

N/A

Description of changes

2.3.3 CYW43022

New features

Component	Description	Implication/advantage
Wi-Fi	Offloads	Improves performance in low power

Wi-Fi certification

Chipset	WFA program supported
CYW43022	11n, 11ac, WPA3, PMF, and vulnerability

Bug fix

N/A

Known issues

N/A

2.3.4 CYW43012

New features

N/A

Wi-Fi certification

Chipset	WFA program supported
CYW43012	11n, 11ac, WPA3, PMF, and vulnerability

Bug fix

- WFA certification fixes:
 - WPA3: Test case - 5.8.6, 5.8.3 – Fix for roam issue from 5G configured AP to 6G configured AP.
- Fix for device PAPD optimization.
- Fix for device Deauthentication attack failure during 11W enabled scenarios.
- Fix for authentication failure due to WPA3 SoftAP beacon advertising RSN extension and SAE hash.
- [Soft AP]Fix for handling reassociation request with PMKID.
- Fix for RSSI report failures noticed in 2.4 Ghz.
- Fix for Power Optimization noticed during CSA and power save enabled.

Known issues

N/A

Description of changes

2.3.5 CYW54591

New features

Component	Description	Implication/advantage
Wi-Fi	Support for survey dump	Provides channel assessment functionality to understand environment behavior

Wi-Fi certification

Chipset	WFA program supported
CYW54591	11n, 11ac, WPA3, PMF, and vulnerability

Bug fix

- WFA certification fixes:
 - 11N: Test case - 5.2.35 – Fix for device connection with 2.4 Ghz 40 MHz access point.
 - 11N: Test case – 5.2.30 -Fix for WMM traffic differentiation with legacy station.
 - VHT: Test case – 5.2.50 – Fix for device to transmit data at spatial streams advertised in capability.
 - WPA3: Test Case – 5.2.9,5.2.10 – Fix for scan result updation with multiple BSSID scenario.
- Fix for RX throughput improvements.
- Fix for maximum client support during AP+AP+STA scenario.
- Fix for stability issue on WLAN country code change.
- Fix for connectivity issues noticed due to PMK expiry.
- Fix for stability issues noticed in multiple BSS scenarios.

Known issues

N/A

2.3.6 CYW5557x

New features

Component	Description	Implication/advantage
Wi-Fi	Support for WLBGA package	
	Offload support with GTKOE and MQTT/TLS	Better performance in power-save scenarios
	Support for Survey Dump	Provides channel assessment functionality to understand environment behavior
	Support for Fast Transition in WPA3	Reduces roam time latency in WPA3 security

Description of changes

Wi-Fi certification

Chipset	WFA program supported
CYW55572/55573	11ax – R2, 6E
	MBO, OCE, OWE
	WPA3 (192 bits, TLS 1.3, PSK, SCV)
	11n, 11ac, PMF, P2P, and vulnerability

Bug fix

- WFA certification fixes:
 - WPA3: Test case - 5.8.6 – Fix for roam issue from 5G configured AP to 6G configured AP.
 - 11N: Test case – 5.2.30 – Fix for WMM Prioritization in BSS with non-WMM station in same environment.
 - 11N: Test Case – 5.2.5 – Fix for throughput issue noticed with 802.11 b/g mixed mode scenario.
 - WPA3: Test Case – 5.8.6 – Fix for BTM request in WPA3 roam scenarios.
 - WPA3:Test Case – 9.1.10 – Fix for association failure noticed with fast transition enabled AP.
 - WPA3:Test Case – 9.1.1 – 9.1.10 – Fix for roam failure noticed with fast transition enabled AP.
 - WPA3:Test Case – 9.2.1 – Fix for RSN extension IE in association request frame on AP association.
 - OCE: Test Case – 5.7.3,5.12.1 – Fix for initial AP selection based on the metrics information from Beacon/Probe response.
 - 11AX: Fix for low throughput and rate drop seen with UL OFDMA test cases in 5/6 GHz.
 - QuickTrack : WPA2 – Fix for the WPA2 Personal mixed mode association failure.
- Fix for WPA supplicant status update on disconnection scenarios.
- Fix for regulatory power issues for 6E.
- Fix for RX throughput improvements.
- [SDIO]Fix for Zero stalls noticed with WPA3 security specific to Mercusys AC1300.
- Fix for PAPD issues for TPC improvements.
- Fix for roaming issues noticed during WPA2 Security.
- Fix for roaming issue noticed in 11R intra band scenarios.
- Fix for RSSI corrections with Tri-Band chips.
- Fix for connectivity issue noticed in WPA3 Enterprise only security.
- Fix for connectivity issue noticed due to beacon loss from AP.
- Fix for AP connection latency with VSDB STA and Auto Go or STA and AP scenarios.
- Fix for stability issues noticed with Dual AP + STA interface.
- [SDIO] Fix for stability issue noticed during throughput scenario with Soft AP and STA interface .
- Fix for Power measurement failures on random channels during 11ax UL-OFDMA.
- Fix for interop issue with 6 GHz AP like Asus , NEP.
- Fix for connectivity issues noticed with OWE Soft AP scenarios.
- Fix for connectivity issue noticed with WoWLAN key rotation enabled.
- Fix for memory leak issue in STA/P2P scenarios.
- Fix for RX sensitivity in signaling mode for 2G band.

Description of changes

NVRAM changes

- For WLEPA and WLIPA should consider with latest NVRAM for better performance.
- Support for 6 GHz ED threshold parameters.
- Fix for TPC tuning which benefits range enhancements.
- PPR adjustments for power update in 2.4 GHz.

Note: Contact the module vendor or local Infineon distribution channel (FAE or local sales representative) to get the NVRAM changes.

Known issues

WLEPA

- Support for TPC (11h) not available for 5G band.

FCIPA/WLIPA

- Support for AFC is not available in 6G band .
- Support for connecting to only LPI AP in the 6G band is not available.

Documentation

3 Documentation

For more details, see the following documents:

- 002-38637: Getting started with AIROC™ Wi-Fi & Bluetooth® combo chip on Raspberry Pi CM4 Lite in Linux
This guide provides step-by-step instructions to configure the AIROC™ Wi-Fi & Bluetooth® combo chip on the host, to load the FMAC driver, and to establish a Wi-Fi connection between an access point (AP)/SoftAP and a station (STA).
- 002-30394: Connectivity technical brief for Linux

Infineon's Wi-Fi & Bluetooth® or Bluetooth® Low Energy connectivity solutions are integrated into the Linux open-source ecosystem. The supported hardware and software are described in this document, including their features, modes, and limitations.

Glossary

Glossary

AKM

authentication and key management

AP

access point

ARP

address resolution protocol

CSA

channel switch announcement

DPP

device provisioning protocol

mDNS

multicast DNS

NDOE

neighbor discovery offload engine

OWE

opportunistic wireless encryption

PFS

perfect forward secrecy

PMF

protected management frame

SAE

simultaneous authentication of equals

SAP

soft access point

TKO

TCP keepalive offload

TWT

target wake time

SCV

server certificate validation

TLS

transport layer security

PMK

pairwise master key

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