

AIROC™ CYW5557x Tri-Band Wi-Fi 6/6E + Bluetooth® 5.3 Combo

Robust, Secured Connectivity for IoT Applications

Infineon delivers market-proven AIROC™ Wi-Fi and Bluetooth® SoC combos with robust, reliable, and secure wireless connectivity. Infineon is the industry leader in Wi-Fi for the IoT with over 1 billion wireless devices in the field over the last 20 years, making AIROC™ the most deployed wireless IP in the industry. The CYW5557x product family consists of Wi-Fi 6/6E + Bluetooth® 5.3 combo devices including variants supporting SISO (1x1) or MIMO (2x2), dual-band 2.4/5 GHz, or tri-band 2.4/5/6 GHz in the same form factor to enable multiple end products in a single board design.

The AIROC™ CYW5557x single-chip device provides the highest level of integration for commercial and consumer IoT wireless systems, with integrated tri-band, 2x2 MIMO, IEEE 802.11ax WLAN MAC/baseband/radio, Bluetooth® 5.3 MAC/baseband/radio, and an integrated Power Management Unit. CYW5557x offers a host of differentiated feature sets including best-in-class range, robust network connection, smart coexistence, power efficiency, and multi-layer security to enhance the connectivity performance and improve the user experience.

The WLAN interfaces the host processor through a PCIe v3.0 Gen2 or an SDIO 3.0 interface, while the Bluetooth® host interface is provided through a high-speed, 4-wire UART interface. Additionally, the solution supports PCM and I²S interfaces for Bluetooth® audio applications. CYW5557x also supports coexistence interfaces for external LTE and 802.15.4 chips.

It comes in a small form-factor package with minimal external components to drive down cost and allows for platform design flexibility in size, form, and function. The WLAN and Bluetooth® radios also include on-chip power amplifiers and low-noise amplifiers to further reduce the need for external components.

AIROC™ CYW5557x is enabled in Linux and Android with software pre-integrated on several third-party processors. Infineon wireless module partners, including Murata, AzureWave, Laird, and USI, enable fast time-to-market. For a complete list, please see the [module selection guide](#) on the [AIROC™ Wi-Fi + Bluetooth® Combos product page](#) or visit the [AIROC™ CYW5557x product page](#).

AIROC™ CYW5557x benefits

- Extreme low latency from greenfield 6 GHz bands and virtual simultaneous dual-band feature for seamless audio and video streaming
- Range boost to ensure devices stay connected to a remote access point
- Enhanced network robustness features to ensure best streaming of video/audio in congested or overlapping network environments
- Advanced power saving features to maximize battery life
- Network offload feature to relieve the host processor and save system power consumption
- Multi-Layer security for protection of individual subsystems through whole product lifecycle
- Best-in-class Bluetooth® receive sensitivity and multiple optimized transmission options of 0 dBm, 13 dBm, and 20 dBm of output power for various applications
- AIROC™ Bluetooth® stack and example code to shorten Bluetooth® development cycle
- Shorten time to market with globally certified module partners
- Wi-Fi support in the [Infineon Developer Community](#) with direct access to online application support engineers

Key features

Wi-Fi / WLAN features:

- Wi-Fi 6/6E release 1 and 2 compliant
- MU-MIMO, OFDMA, 1024QAM, BSS Coloring, OMI, TWT
- Dual-band (2.4/5 GHz) or Tri-band (2.4/5/6 GHz) capable
- 5/6 GHz: 20-/40-/80-MHz, 1024QAM, 2x2 MIMO, up to 1.2 Gbps
- 2.4 GHz: 20-/40-MHz, 1024QAM, 2x2MIMO, up to 574 Mbps
- 802.11ax STA and SoftAP modes
- Advanced power-saving features and offload features to conserve battery life
- Supports 802.11d/h/k/r/v/w/ai
- WPA3: AP and STA, Personal/Enterprise
- Encryption/decryption and authentication firmware, anti-rollback protection, and lifecycle management

Bluetooth® features:

- Bluetooth® 5.3 certification (Classic + LE)
- LE Audio for best audio quality
- Multiple Tx options: 0 dBm, 13 dBm, and 20 dBm

Interfaces:

- WLAN: PCIe, SDIO
- Bluetooth®: UART, PCM/I²S

Coexistence:

- Built-in advanced algorithms for Bluetooth®/ WLAN coexistence
- 2-wire SECI for external third-party Bluetooth®/GPS/LTE/802.15.4 radios

Packages:

- FCBGA: 0.65 mm pitch for easy design
- WLCSP: 0.2 mm pitch for module design
- WLBGA: 0.35 mm pitch for compact size

Temperature range:

- -40°C to +85°C

PRODUCT BRIEF

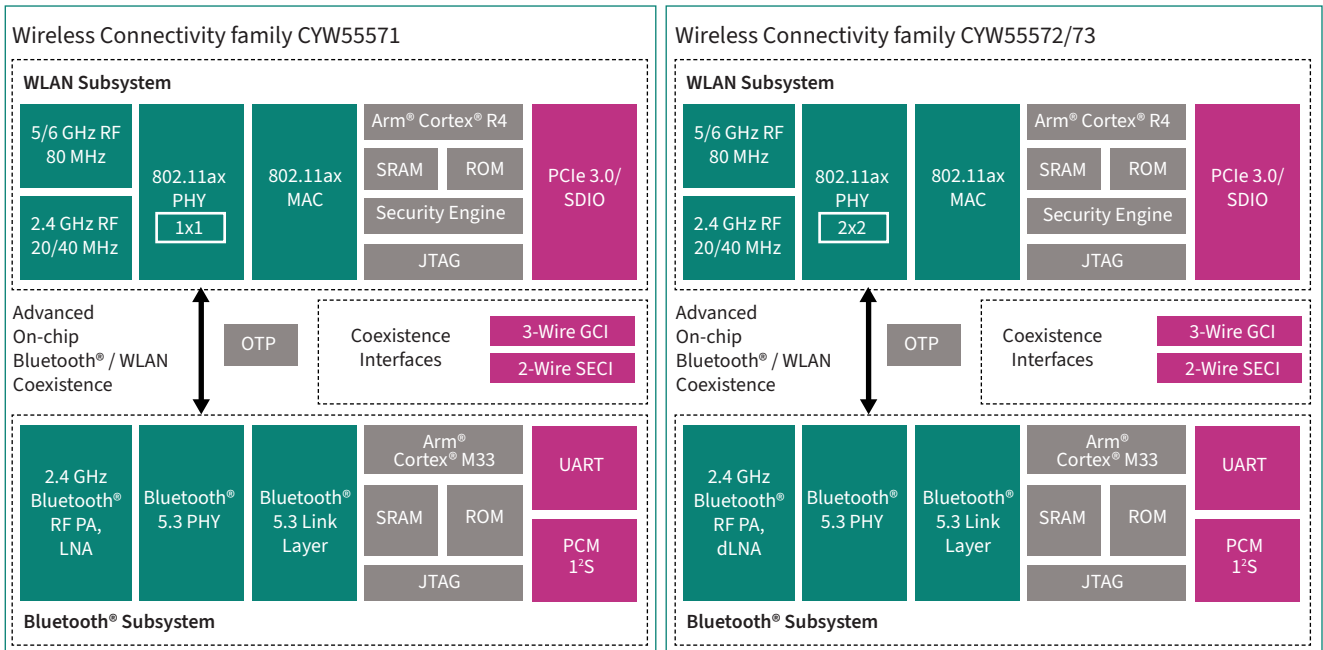
Key applications

Video and Audio	Wireless speakers, voice assistants, surveillance cameras, home entertainment, video streaming adapters, drones, digital cameras, conference bridges, gaming consoles
Commercial / Industrial	Indoor/warehouse asset tracking hubs, industrial gateways for Wi-Fi and Bluetooth® enabled lights/sensors, base stations for wireless cameras. Mobile POS, AI-enabled edge devices, medical imaging machines, security systems, smart city, robots, mobile gateway

Module options

Module partner	Part Number	Infinion base parts	Description	Type	Temp range	Package dimensions
AzureWave	AW-XH325	CYW55571	1x1 Tri-Band Wi-Fi 6/6E SISO/Bluetooth® 5.3	SiP	-40°C to +85°C	10 x 10 x 1.26
AzureWave	AW-XM612	CYW55572	2x2 Dual-Band Wi-Fi 6 MIMO/Bluetooth® 5.3	LGA	-40°C to +85°C	10 x 10 x 1.26
AzureWave	AW-XH323	CYW55573	2x2 Tri-Band Wi-Fi 6/6E MIMO/Bluetooth® 5.2	SiP	-40°C to +85°C	13 x 15 x 1.95
Laird Connectivity	453-00117	CYW55573	2x2 Tri-Band Wi-Fi 6/6E MIMO/Bluetooth® 5.4	M.2 1318 SMT	-40°C to +85°C	13 x 18 x 1.9
Murata	LBEE5X-V2EA-802	CYW55573	2x2 Tri-Band Wi-Fi 6/6E MIMO/Bluetooth® 5.3	Shielded Resin	-40°C to +85°C	12.5 x 9.4 x 1.2
USI	WM-BAC-CYW-51	CYW55572	2x2 Dual-Band Wi-Fi 6 MIMO/Bluetooth® 5.3	SiP	-40°C to +85°C	11 x 11 x 1.2
USI	WM-BAX-CYW-61	CYW55573	2x2 Tri-Band Wi-Fi 6/6E MIMO/Bluetooth® 5.2	SiP	-40°C to +85°C	11 x 11 x 1.2

Note: [*more module options](#)



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