

# AIROC™ CYW55513/2/1 Wi-Fi & Bluetooth® combo

Low-power, 1 x 1, 2.4/5/6 GHz, IEEE 802.11ax, 20 MHz, Wi-Fi 6/6E, Bluetooth® 5.4

Infineon delivers market-proven AIROC™ Wi-Fi and Bluetooth® system on chip combos with robust, reliable, and secure wireless connectivity. Infineon is an 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 AIROC™ CYW55513/2/1 are a family of low-power, single-chip devices that support 1x1 single-stream, tri-band (CYW55513), dual-band (CYW55512) and single-band (CYW55511), Wi-Fi 6/6E, IEEE 802.11ax-compliant Wi-Fi MAC/baseband/radio, and Bluetooth®/Bluetooth® Low Energy 5.4. The device supports up to 1024 QAM MCS11 in 20 MHz channels delivering PHY rates up to 143 Mbps. CYW55513/2/1 provide best-in-class range/coverage by delivering up to 24 dBm of transmit power, and sensitivity down to -101.5 dBm, while supporting Wi-Fi 6/6E range improving features such as HR ER-PPDU, longer guard intervals, long OFDM symbol, and dual-carrier modulation (DCM), with Infineon range improvements for legacy rate devices. SDIO and gSPI interfaces available for interfacing to an array of A-Class (Linux/Android) and M-Class (RTOS) host processors.

CYW55513/2/1 include a Bluetooth® 5.4-compliant subsystem, with a 192 MHz Arm® Cortex®-CM33 processor, supporting Bluetooth® classic (BDR, EDR for A2DP/HFP) and Bluetooth® Low Energy audio (LC3 codec), running in hosted/controller or embedded mode where it can offload the host processor.

Additionally, the devices support Bluetooth® LE 2 Mbps, Bluetooth® LE 1 Mbps, Low-Energy long-range (LR), and periodic advertising extensions. The devices integrate three power amplifiers delivering +4/+13/+19 dBm offering best-efficiency for each power level. The long range performance is delivered with industry leading -111.5 dBm LE long range (125 kbps S = 8) sensitivity, paired with the high-power integrated PA, deliver best-in-class LE long-range performance. The UART, SDIO shared with Wi-Fi, TDM/I²S, PDM, and analog microphone, plus additional GPIOs are available.

The reliable, high-performance AIROC™ CYW55513/2/1 Wi-Fi and Bluetooth® 5.4 combos deliver powerful Wi-Fi capabilities that go beyond the Wi-Fi 6/6E standard for congested networks in IoT, smart home, and wearable applications and get you to market faster by speeding up the development time through a broad array of module vendors.

For more information go to: [CYW55513](#), [CYW55512](#), [CYW55511](#)



## Key features

### Wi-Fi/WLAN features

- Leading transmit power: +24 dBm
- Best in class sensitivity: -101.5 dBm
- Wi-Fi 6/6E: range improving features: HE ER-PPDU, long guard Intervals, long OFDM symbol, DCM
- Wi-Fi 6E greenfield spectrum for lower latency and improved range
- Leading transmit power: +24 dBm
- 11ax target wake time (TWT)
- WPA2/WPA3 Personal/Enterprise
- Supports internal or external LNA/PA and antenna diversity

### Bluetooth® features

- Bluetooth® 5.4 (Classic + LE)
- Embedded or hosted AIROC™ Stack
- Embedded LE isochronous channel w/LC3 CODEC for Bluetooth® LE audio
- LE 2M, LE 1M, LE LR, ADV extensions
- Three output power paths optimized for best efficiency: +4/ +13/ +19 dBm
- Support shared or dedicated antenna for optimized coexistence with Wi-Fi, 802.15.4/Thread, LTE

### Interfaces

- WLAN: SDIO 3.0, shared SDIO, and GSPi
- Bluetooth®: HSUART, and shared SDIO
- Audio: 2x TDM (I²S/PCM), DMI

### Coexistence

- Advanced coexistence 2-wire BTSIG WCI-2 (LTE) and 3-wire (ZigBee)

### Package

- WLBGA

## Key benefits

- Best range Wi-Fi 6/6E
- Power efficient Wi-Fi /Bluetooth®
- Bluetooth® 5.4/LE audio



**PRODUCT BRIEF**

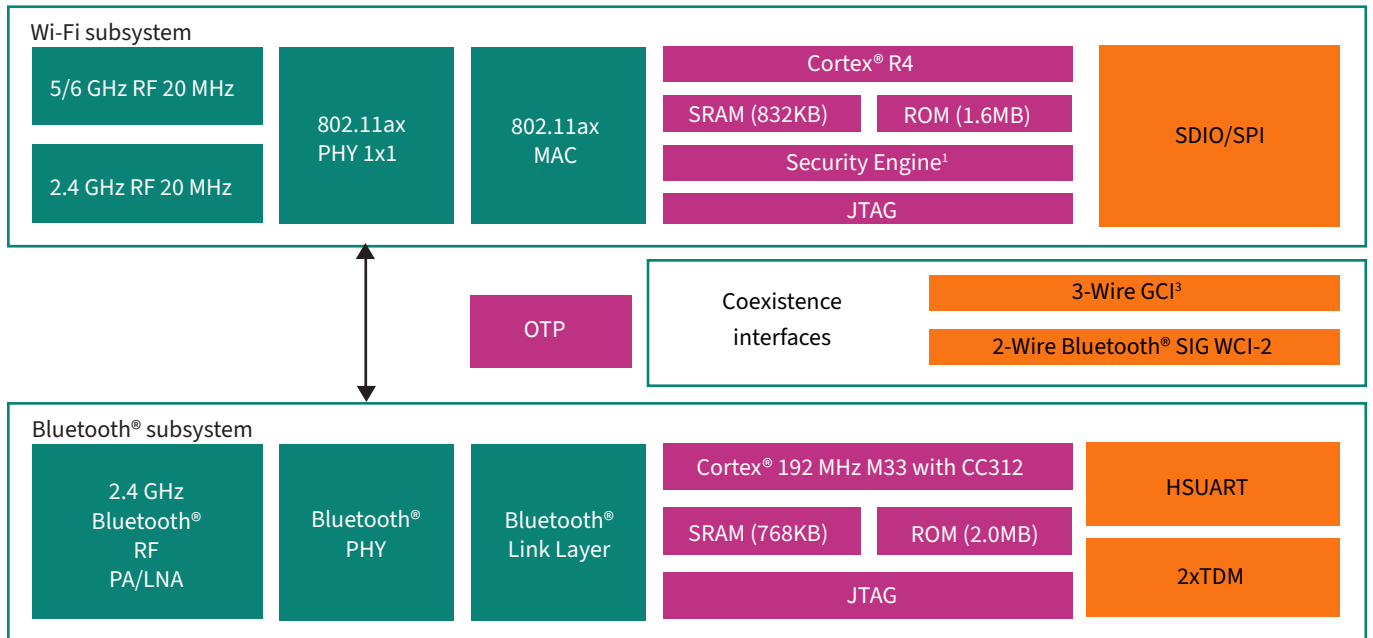
**Key applications**

Smart home/IoT	Smart home, IP cameras, door locks, appliances, printers, speakers, gaming, cameras
Wearables	Smart watches, fitness bands
Industrial/Medical	Conference systems, automated meter readers, payment systems

**Infinion and module partner product summary**

Product	Description	Operating temp	Package/dimensions
CYW55513IUBGT	1x1 802.11ax 2.4/5/6 GHz 20 MHz and Bluetooth® 5.4 combo	-40°C to 85°C	WLPGA
CYW55512IUBGT	1x1 802.11ax 2.4/5 GHz 20 MHz and Bluetooth® 5.4 combo	-40°C to 85°C	WLPGA
CYW55511IUBGT	1x1 802.11ax 2.4 GHz 20 MHz and Bluetooth® 5.4 combo	-40°C to 85°C	WLPGA
<u>U-Blox MAYA-W3</u>	U-Blox CYW55513/2/1 Modules, U.FL connectors or antennas	-40°C to 85°C	10 x 14 mm SMD
<u>Ezurio Sona IF513</u>	Ezurio CYW55513 Module, RF Trace or MHF4L connectors	-40°C to 85°C	12 x 16 mm M.2 1216 SMT
<u>AW-XM606</u>	Azurewave CYW55513 Module with RF trace	-40°C to 85°C	12x12 mm LGA
<u>Murata 2FY</u>	Murata CYW55513 Module	-40°C to 85°C	7.9 x 7.3 mm
<u>WM-BAX-CYW65</u>	USI CYW55513 SIP Module with RF trace	-40°C to 85°C	8.6x8.1 mm Molding SIP

**CYW55513 wireless connectivity family**



For more module options visit [here](#).

Support in the [Infineon Developer Community](#) with online direct access to application support engineers.

Published by  
Infineon Technologies AG  
Am Campeon 1-15, 85579 Neubiberg  
Germany

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Public

Document number: 002-40109 REV. \*A  
Date: 06/2024

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