

Wi-Fi Market Trends Worldwide 2022

Wi-Fi (Wireless Fidelity) is a wireless local area networking (WLAN) technology that sends and receives radio waves between devices in the license-free 2.4GHz, 5GHz, and 6GHz bands. Since its introduction, Wi-Fi has gained traction in various products due to its efficient, reliable and secure connectivity.

This report focuses on Wi-Fi chips and solutions, discusses global Wi-Fi market trends and anticipates changes through 2026.

| A Diverse Wi-Fi Standard and Ecosystem

Wi-Fi devices are authorized to communicate with each other for local functionality by connecting to LAN (local area networks, such as home or company networks) and WAN (wide area networks, such as the internet or large enterprise networks) based on a series of industry standards of the IEEE 802.11 family, which are specified by the global standards organization IEEE (Institute of Electrical and Electronic Engineers). IEEE and Wi-Fi Alliance continue improving Wi-Fi features and identify each generation of the Wi-Fi standards with a well-known name, including Wi-Fi 4 (802.11n), Wi-Fi 5 (802.11ac), Wi-Fi 6 and Wi-Fi 6E (802.11ax), and Wi-Fi 7 (802.11be), to help consumers and industries keep better track of upgrades.

Until now, diversified Wi-Fi standards and ecosystems are gradually constructed, Wi-Fi is delivering higher value and more fueled experiences to users, enterprises, and service providers.

Generation	IEEE standard	Maximum link rate (Mbit/s)	Adopted	Radio Frequency (GHz)
Wi-Fi 7	802.11be	1376-46120	2023	2.4, 5, 6
Wi-Fi 6E	802.11ax	574-9608	2020	6
Wi-Fi 6	802.11ax	574-9608	2019	2.4, 5
Wi-Fi 5	802.11ac	433-6933	2014	5
Wi-Fi 4	802.11n	72-600	2008	2.4, 5
Wi-Fi 3	802.11g	6-54	2003	2.4
Wi-Fi 2	802.11a	6-54	1999	5
Wi-Fi 1	802.11b	1-11	1999	2.4
Wi-Fi 0	802.11	1-2	1997	2.4

Due to IEEE and Wi-Fi Alliance

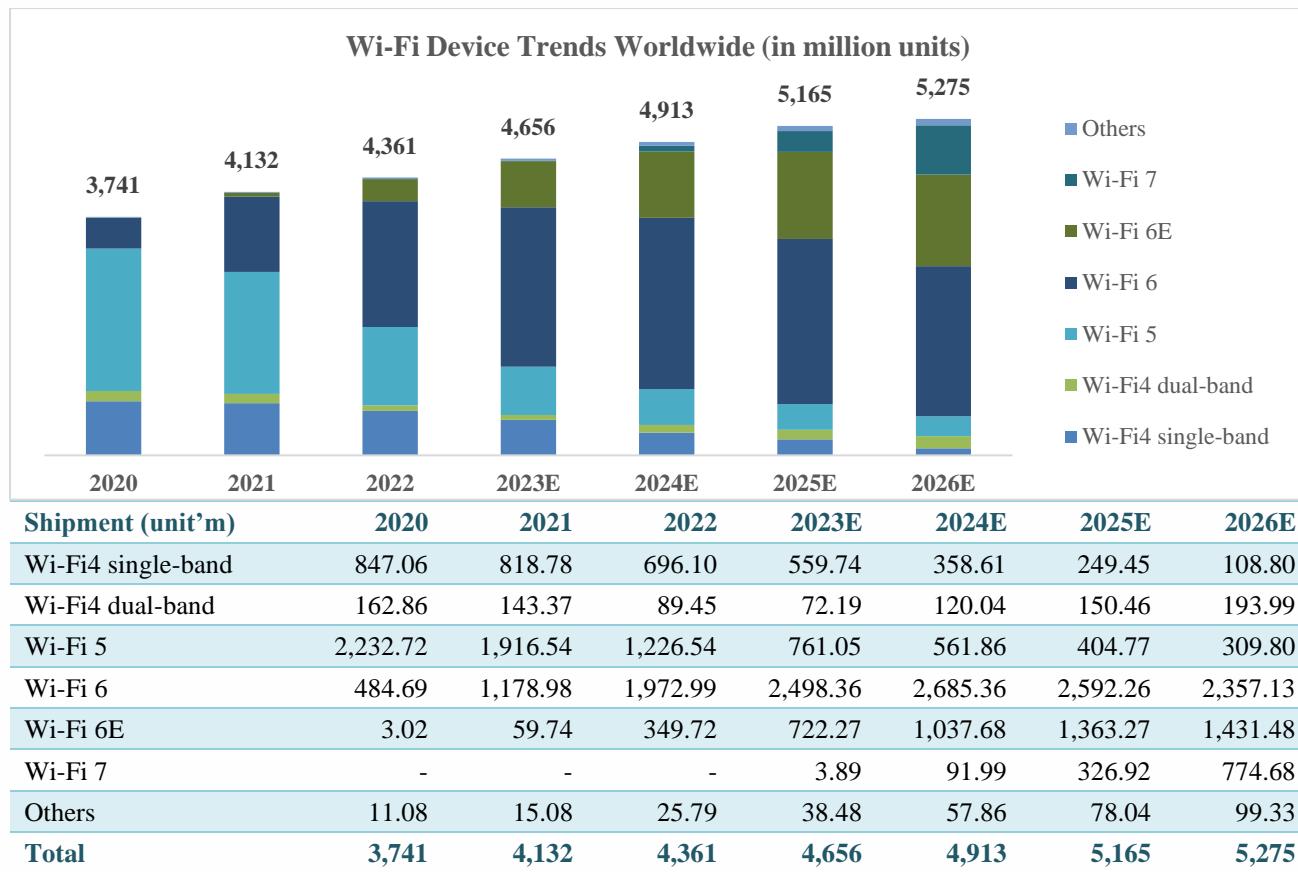
| Wi-Fi 6 and Wi-Fi 6E Drive Global Market Opportunities

The diversified applications such as IoT (Internet of Things) systems, high-definition video conferencing, and virtual reality (AR/VR) accelerate the development of Wi-Fi demands. The increasing enrichment of wireless networking scenarios results in a swift growth in the number of connected devices. In 2022, more than 4.36 billion devices were shipped. In 2026, the number of devices shipments will increase to 5.28 billion, CAGR of 4.87%.

Market momentum underscores the need for the entire 6 GHz band and more concurrently connected devices, taking into consideration of factors such as consumers' and business' need for effective communications, technology developments and access to additional spectrum. Wi-Fi 6 and Wi-Fi 6E satisfy the growing demand for higher-bandwidth services and multiple concurrencies. Wi-Fi 6 and Wi-Fi 6E is a significant upgrade over the previous wireless protocol, efficiently handling large network traffic volumes and can lead to 75% less latency than previous versions.

Wi-Fi 6 adds transformational multi-user capabilities like OFDMA and uplink MU-MIMO to manage densely populated environments. It has a maximum speed of 9.6Gbps, which is higher than Wi-Fi 5 and Wi-Fi 4. Wi-Fi 6E adds 6GHz operation to Wi-Fi 6 capabilities, offering more 80 and 160MHz channels, for a new swath of spectrum unencumbered by interference from older Wi-Fi 5 or 4 devices.

In 2022, the global Wi-Fi 6 and Wi-Fi 6E device shipments reached 2.32 billion units with a growth rate of 87.51%, and 3.79 billion units in 2026, CAGR of 13.01%.

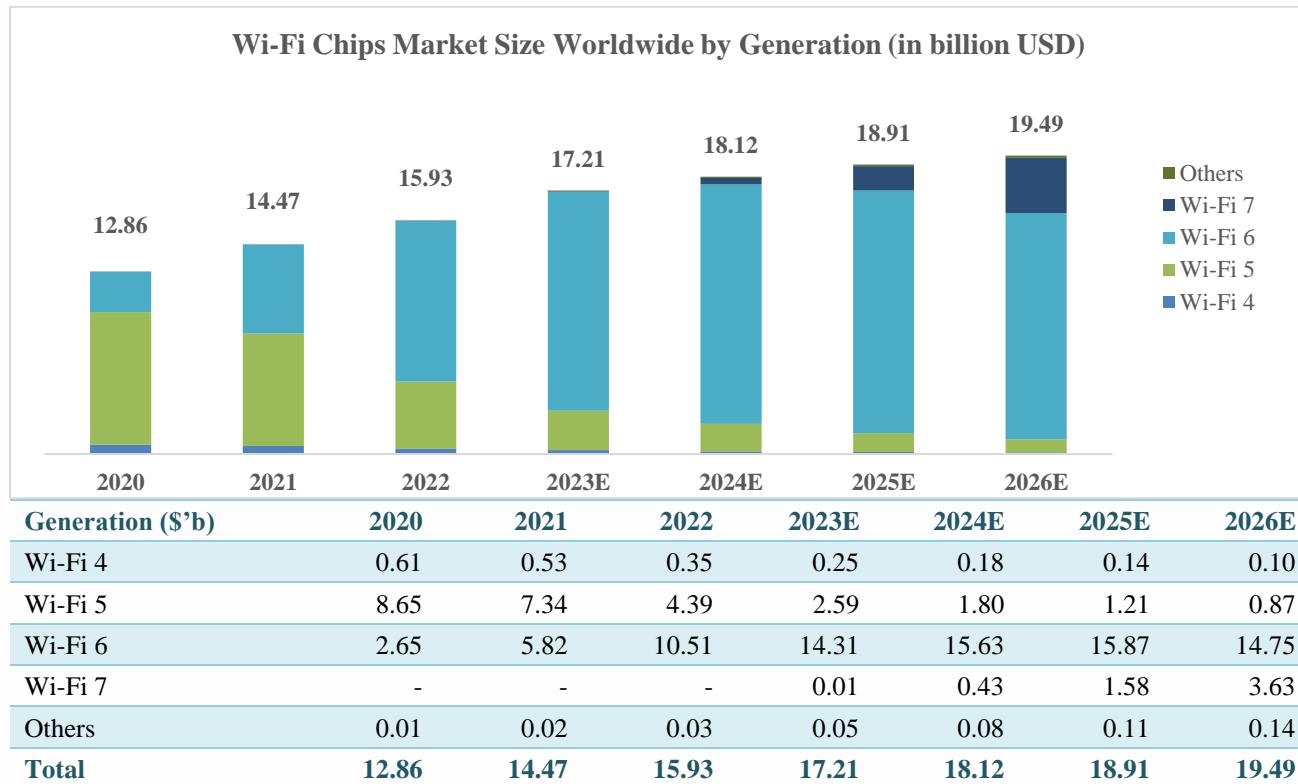


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The increasing use of Wi-Fi in homes, offices and public spaces with a rising price caused by the improvement in product integration density and technical difficulty, will result in the continued growth of the Wi-Fi market. The global market size of Wi-Fi chips is estimated to be \$15.93 billion in 2022, and then to be \$19.49 billion by 2026, with a CAGR of 5.17%.

On the other hand, the increasing demand for high-bandwidth, high capacity, low latency Wi-Fi accelerates Wi-Fi 6 and Wi-Fi 6E products' adoption. Sales of Wi-Fi 6 and Wi-Fi 6E achieve \$10.51 billion, accounting for 65.98% market share in 2022. Up to now, shipments of Wi-Fi 6 products are

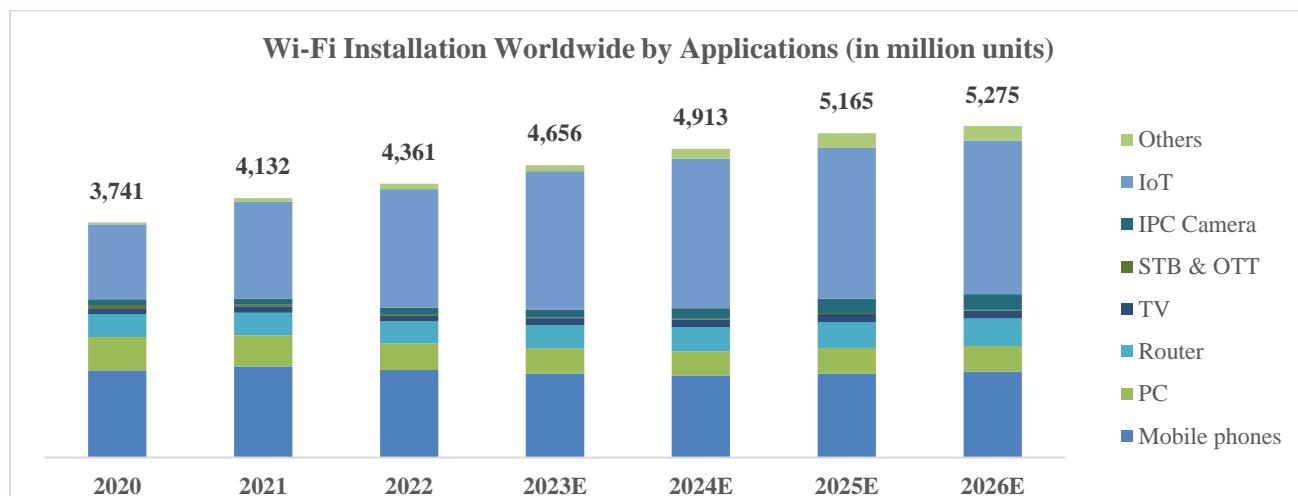
still in the early stages. The rapid application of these technologies provides growth opportunities for Wi-Fi market growth. In 2026, the total sales of Wi-Fi 6 and Wi-Fi 6E chips are expected to increase to \$14.75 billion, with a CAGR of 8.84%.



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| Wi-Fi Further Adoption in Various Scenarios

In 2022, nearly 18 billion Wi-Fi devices are in use, Wi-Fi meets the diverse and rapidly growing Wi-Fi needs including a wide variety of mobile phones, PCs, TVs, IoTs and access points (APs) requirements in homes and enterprises. At the same time, Wi-Fi 6 brings tomorrow's innovations opportunities from new applications such as extended reality (XR), automotive, sophisticated augmented reality applications, and even holographic collaboration solutions, meaning the Wi-Fi market faces great momentum. Wi-Fi will become more commonplace in daily life.



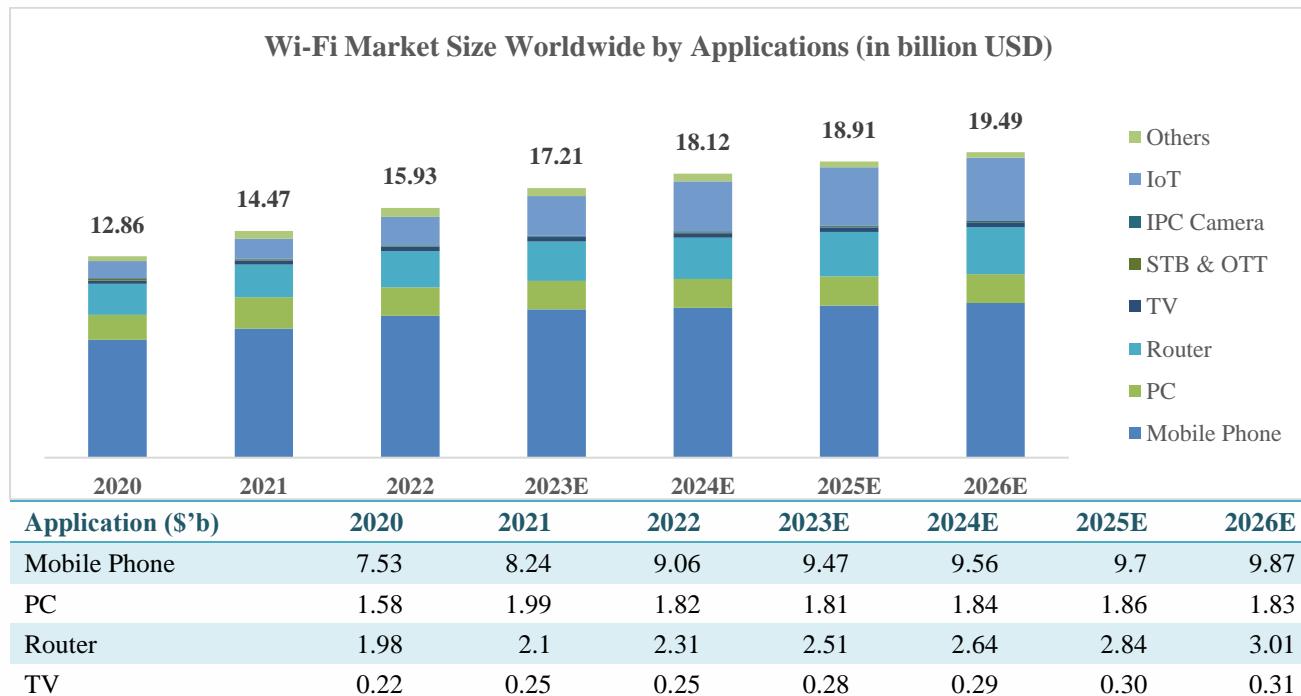
Application (unit'm)	2020	2021	2022	2023E	2024E	2025E	2026E
Mobile Phone	1,389	1,448	1,394	1,339	1,305	1,338	1,368
PC	531	498	423	399	384	405	406
Router	367	360	349	369	387	414	438
TV	90	101	99	112	122	130	130
STB & OTT	52	24	19	11	12	12	9
IPC Camera	89	98	102	129	167	229	248
IoT	1,192	1,543	1,886	2,199	2,378	2,404	2,448
Others	31	60	89	98	158	233	228
Total	3,741	4,132	4,361	4,656	4,913	5,165	5,275

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Overall, although the growth rate of the consumer electronics market is slowing down compared to the previous time, the consumer electronics application is still the largest part of the market, which surpasses 50% market share. The number of mobile phones and PCs shipments (all standards) reached more than 1.82 billion by the end of 2022 and will increase to around 1.77 billion by 2026. In addition, high-performance mobile phones and PCs require advanced Wi-Fi chips, which leads to higher prices. The market size of Wi-Fi products used in mobile phones and PCs is \$9.06 billion and \$1.82 billion respectively in 2022, and will be \$9.87 billion and \$1.83 billion in 2026, respectively.

Beyond that, the number of IoT devices shows a sharp rise in the last few years. The sales of Wi-Fi chips used in IoT devices (except IPC and TVs) is about \$1.82 billion in 2022 and expected to grow to \$4.00 billion in 2026, with a CAGR of 21.76%. The widespread adoption of IoT devices strongly drives the Wi-Fi market growth.

The application of Wi-Fi 6 and Wi-Fi 6E has also driven the development of the router market. In 2022, the worldwide market size of Wi-Fi products used in routers is about \$2.31 billion, expected to grow at \$3.01 billion with a CAGR of around 6.84% towards 2026.

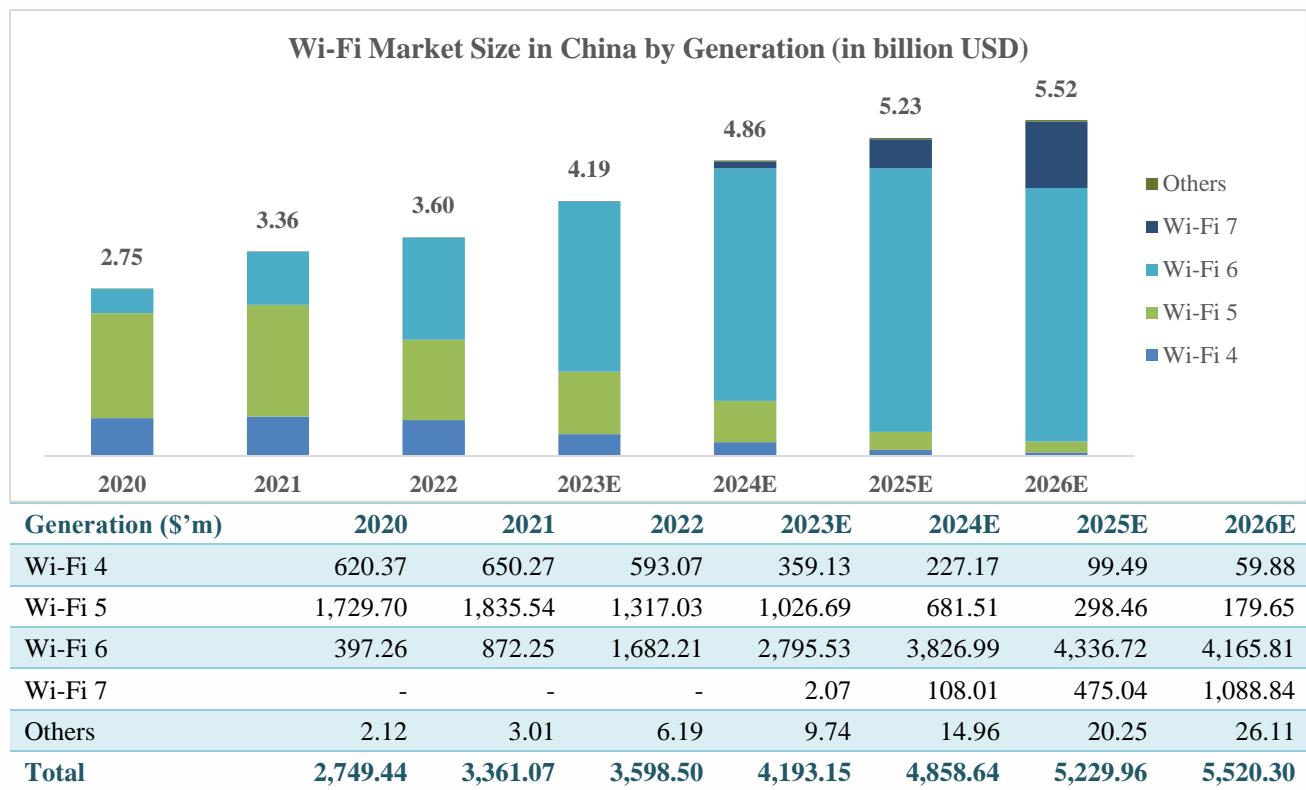


STB & OTT	0.12	0.06	0.05	0.03	0.03	0.03	0.02
IPC Camera	0.04	0.05	0.05	0.06	0.08	0.09	0.11
IoT	1.08	1.28	1.82	2.53	3.2	3.71	4.00
Others	0.31	0.50	0.57	0.52	0.48	0.38	0.34
Total	12.86	14.47	15.93	17.21	18.12	18.91	19.49

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| Strong Demands Leads an Increasing Participation in Chinese Market

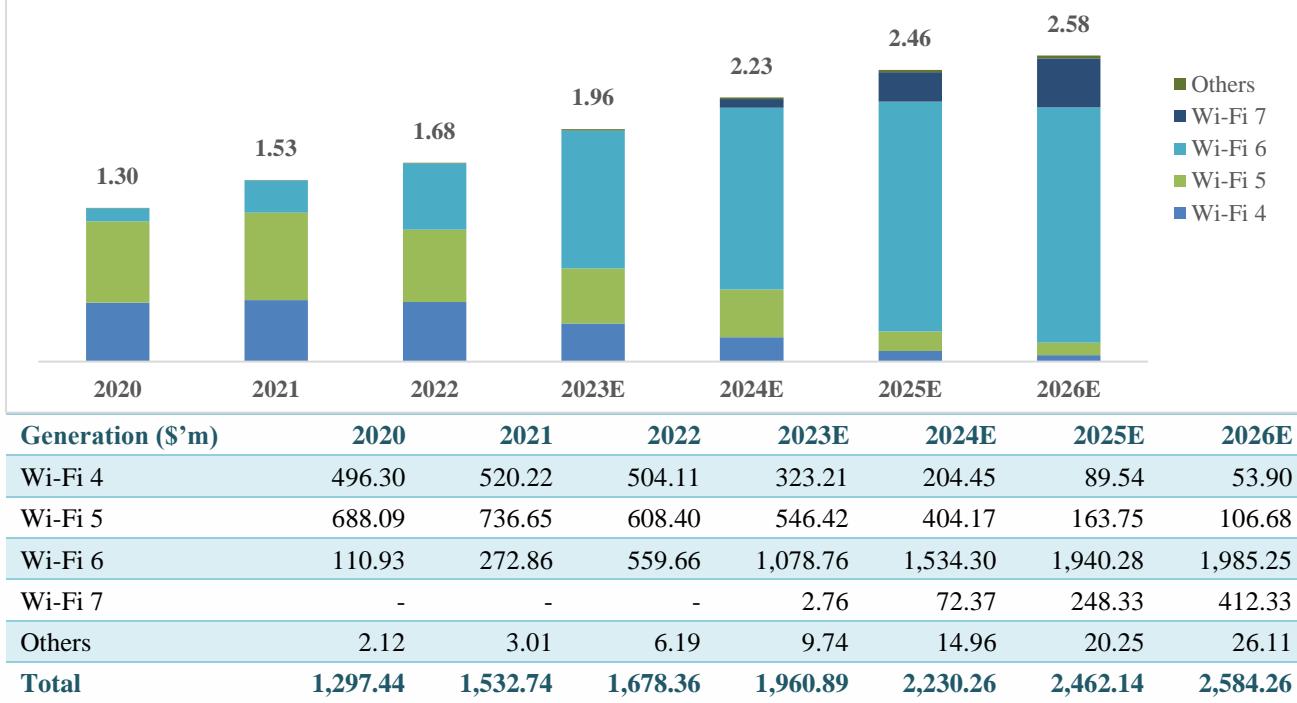
China has been the largest consuming country for semiconductor devices since 2005, so is an important part of global Wi-Fi market. In 2022, China's Wi-Fi market size was nearly \$3.60 billion, which took about 22.60% of the global market. So far, smart sockets, smart lights, smart door locks and other IoT devices have not really taken off a large amount in the promising regional market of China, but the future market potential of Wi-Fi products is unlimited. In 2026, the value of China's Wi-Fi products will attend to \$5.52 billion, with a CAGR of 11.28%. Wi-Fi 6 and Wi-Fi 6E play a major role in Chinese market as well, which achieved \$1.68 billion in 2022 and will grow to \$4.17 billion in 2026, with a CAGR of 25.52%.



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In terms of the current market share of each Wi-Fi standard in China, Wi-Fi6 is already taking shape. Excluding the part of the mobile phones market, the market size of Wi-Fi chips in China can still reach \$1.68 billion in 2022, and will increase to \$2.58 billion by 2026 with a CAGR of 11.32%. The Wi-Fi 6 and Wi-Fi 6E market size is estimated at \$1.99 billion in 2026, coming in at 76.82% of the whole market in China.

Wi-Fi Market Size in China -excluding Mobile phones (in billion USD)



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| A Stable Market Pattern, CR5* Sales Reaches 85.5% of the Market

In 2022, the Wi-Fi market generally shows a stable market pattern. Unsurprisingly, Broadcom and Qualcomm maintained their dominance and occupy nearly 60% of the global market share. Besides them, TI, Intel, MediaTek and Realtek also showed excellent transcripts, CR5 vendors took over 85% of the global market size. Meanwhile, Chinese Wi-Fi companies continued to enhance their international competitiveness by increasing R&D investment, active mergers and acquisitions. With the promotion of advanced generations, the Wi-Fi market landscape is expected to be reshaped.



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* CR5, index of Concentration Ratio, the total market share of the largest five firms

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