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Global and China Passenger Car T-Box Market Report, 2023

May 2023

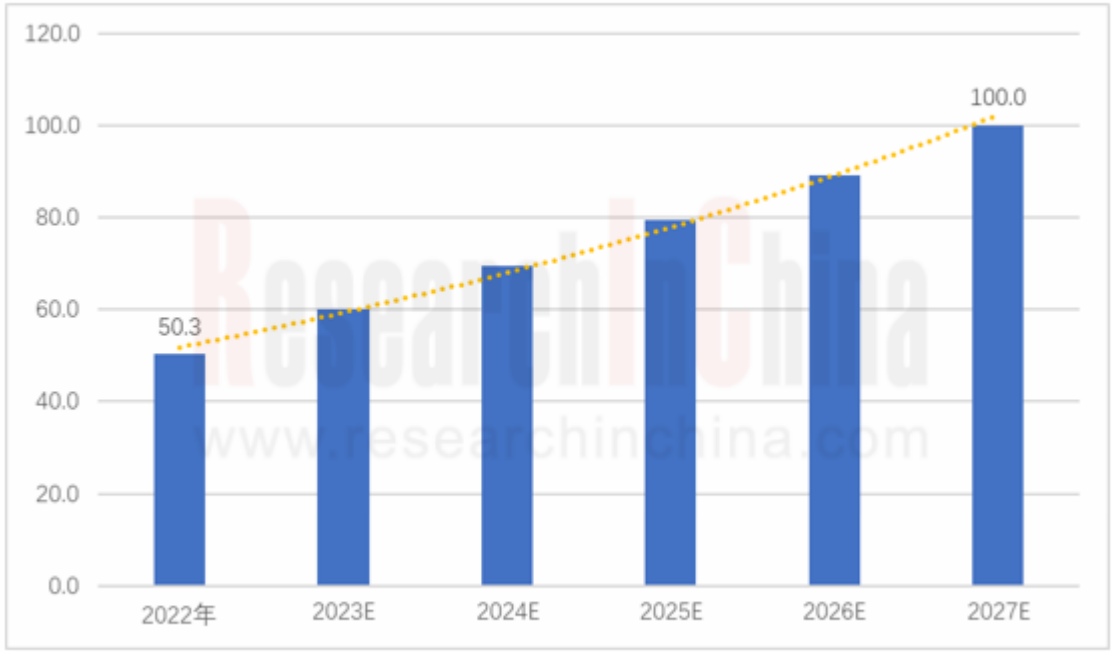
T-Box industry research: the market will be worth RMB10 billion and the integration trend is increasingly clear

ResearchInChina released "Global and China Passenger Car T-Box Market Report, 2023", which combs through and summarizes the status quo, size, industry chain, and competitive pattern of the global and China passenger car T-Box markets, and provides an outlook on future trends.

China passenger car T-Box market will be valued at RMB10 billion in 2027

As more vehicles get connected and the demand for communication from functions like OTA, remote vehicle control and digital key increases, the demand for automotive T-Box is further expanding. In terms of market value, China's passenger car T-Box market was worth about RMB5.03 billion in 2022, a figure projected to reach about RMB10 billion in 2027, sustaining an AAGR of 14.8% in the next five years.

China Passenger Car T-Box Market Size, 2022-2027E (RMB100 mln)



Source: ResearchInChina

The competition among T-Box suppliers intensifies, and the market becomes more concentrated

In terms of the competitive pattern, in 2022 the top ten passenger car T-Box suppliers in China took a combined share of about 80%, an increase of 16 percentage points over 2021. The market featured a higher concentration and the scale effect of companies became obvious.

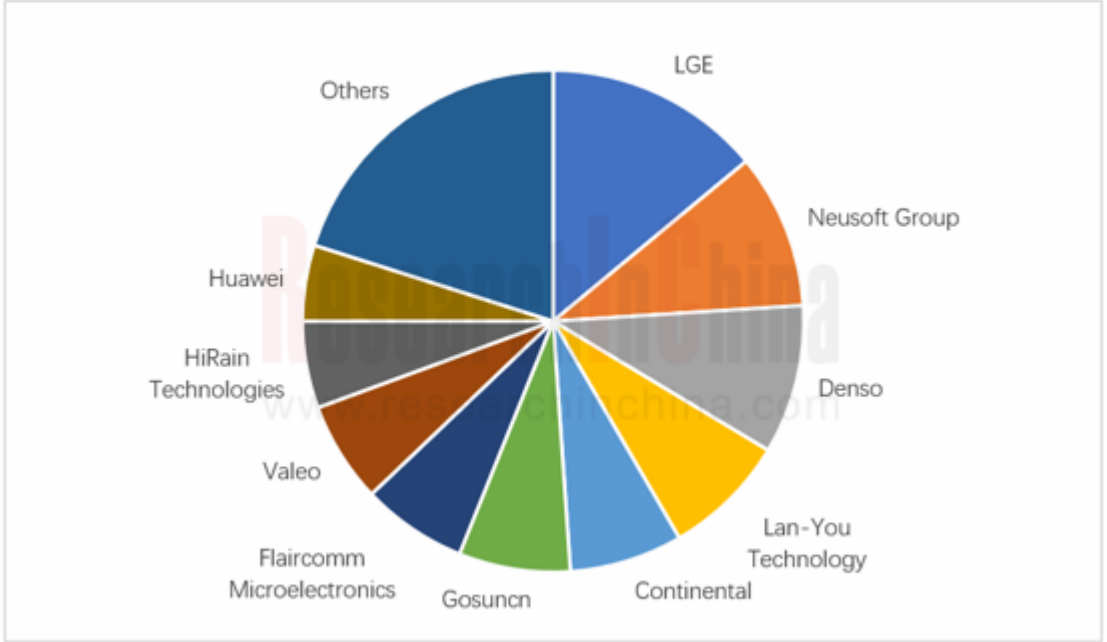
Foreign suppliers mainly supply foreign brands:

- LGE is still the largest T-Box supplier in China, positioned first in the Chinese T-Box market in recent years, and supplies such brands as Volkswagen, GM and Hyundai Kia;
- Denso is the supplier of two Japanese brands, Toyota and Honda;
- Continental mainly supplies Mercedes-Benz and Cadillac among others;
- In addition to BMW, Valeo has also secured orders from some Chinese independent brands such as Changan Auto and Great Wall Motor.

China's local suppliers are making an expansion from local companies to foreign brands:

- Neusoft Group ranked first among China's local T-Box suppliers in 2022, supplying not only independent brands such as Haval, Hongqi, Tank, Lynk & Co and ORA, but also foreign brands like BMW, Mercedes-Benz, Volvo and Audi;
- Lan-You Technology mainly supplies the Dongfeng family, including Dongfeng's own brands like Dongfeng Aeolus and Dongfeng Forthing and also its joint venture brands such as Dongfeng Nissan and Dongfeng Infiniti.

Competitive Pattern of China Passenger Car T-Box Market, 2022



Source: ResearchInChina

Integration trends of T-Box

As well as data collection and forwarding, T-Box tends to offer many other functions including data cleansing, analysis, control, OTA, and integration and analysis of data from multiple ECUs. The trend for software and hardware integration is more obvious. From the prospective of hardware integration, the key trends cover the following.

1. T-Box integrates central gateway

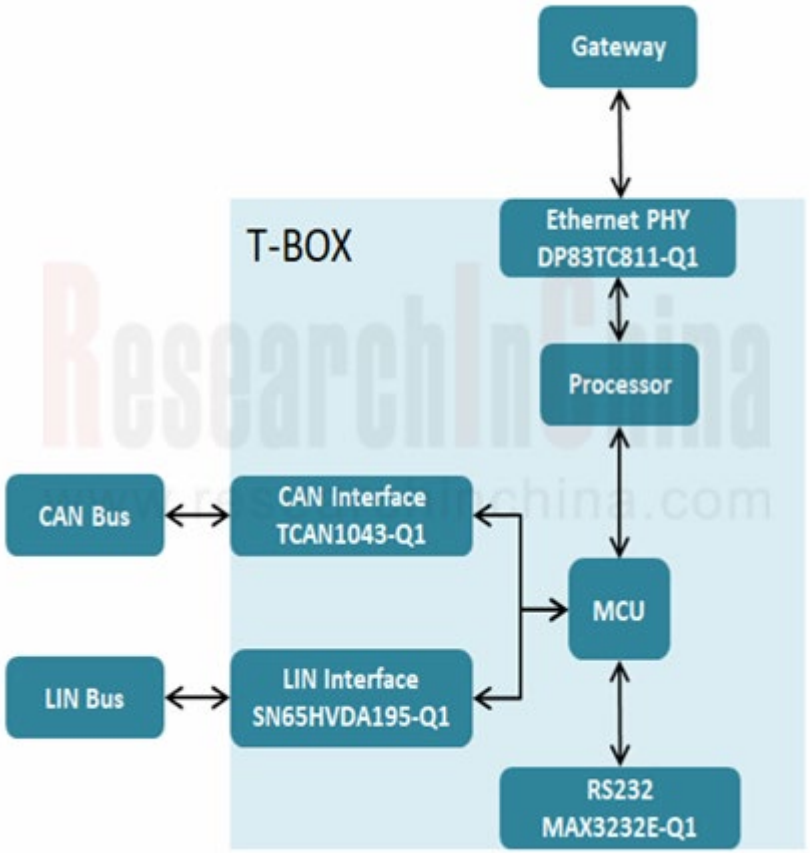
T-Box and central gateway both process enormous amounts of data and have similar functions. The integration of them saves cost and improves data processing efficiency.

2. T-Box integrates 5G module

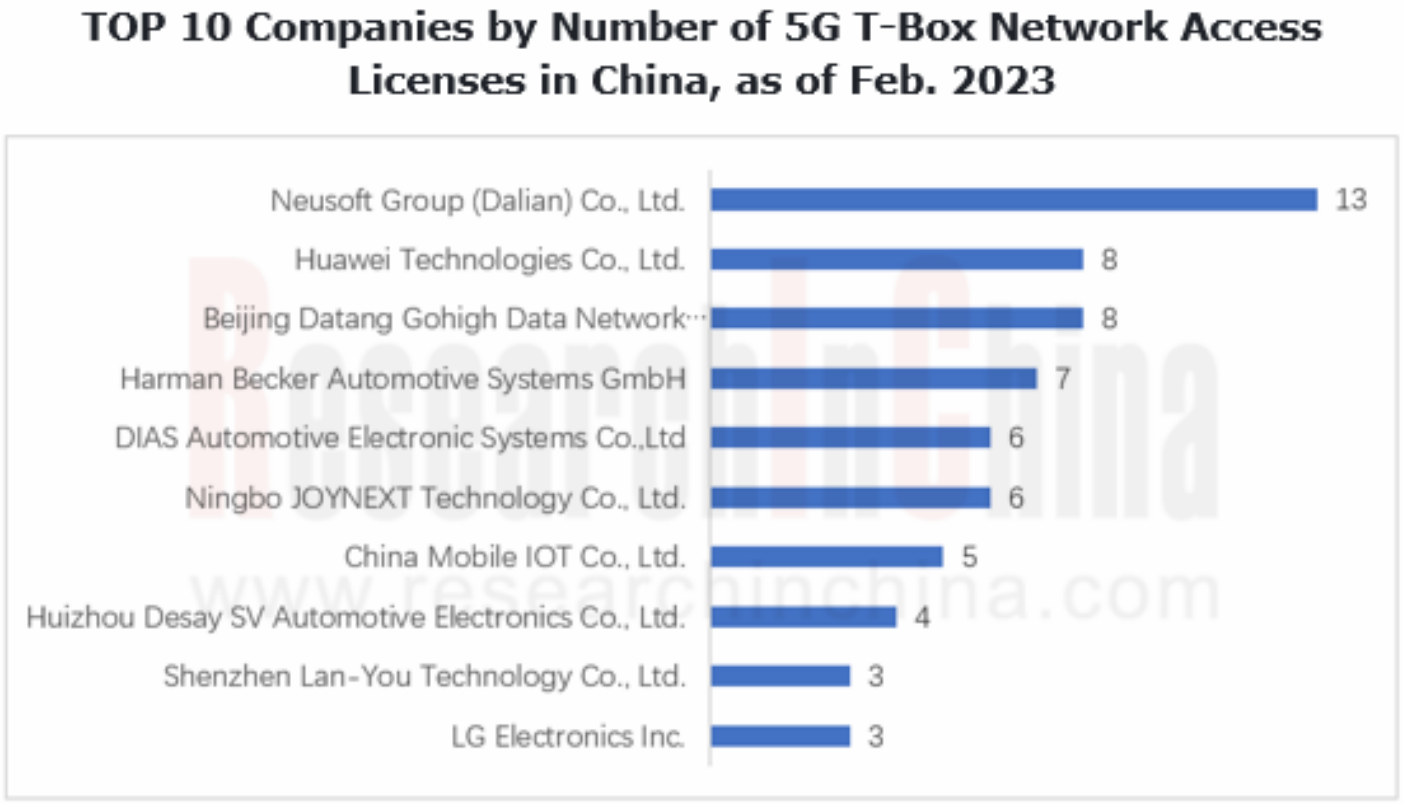
Since the commercial use of 5G in 2019, T-Box has started upgrading to 5G communication.

The passenger cars equipped with 5G as a standard configuration reached 279,000 units in 2022, accounting for 1.4%, a figure jumping to 4.2% in 2023Q1. In terms of T-Box manufacturers, as of February 2023, the Ministry of Industry and Information Technology (MIIT) has issued a total of 90 5G T-Box network access licenses, including 13 to Neusoft, 8 to Huawei and 8 to Datang Gohigh.

T-BOX Architecture Integrating Central Gateway



TOP 10 Companies by Number of 5GT-Box Network Access Licenses in China, as of Feb. 2023



Source: MIIT

Product form trends of T-Box: Smart antenna

In terms of product form, conventional T-Box is heading in the directions of smart antenna, V-Box and communication domain controller.

1. Smart antenna

Smart antennas such as 4G/GPS/BT antenna improve communication quality with fewer wire harnesses, thus saving costs.

Continental's new-generation T-Box for Mercedes-Benz, Volvo and PSA integrates a shark fin antenna;

Neusoft's smart antenna adopts the all-in-one design concept, integrating Tuner, GPS, Wi-Fi and other software and hardware. The integration of conventional shark fin and T-BOX and the collection and digitalization of the wireless signals of the whole vehicle are a way to overcome the difficulty of conventional wiring on the vehicle, functionally improving the communication quality, enabling the smooth, safe and integrated intelligent connection experience and all-scenario coverage, and effectively saving wiring cost. Neusoft's smart antenna has been widely used in Hongqi H9/HQ9 and other models. Meanwhile, the product fully supports 5G and 5G+V2X applications.

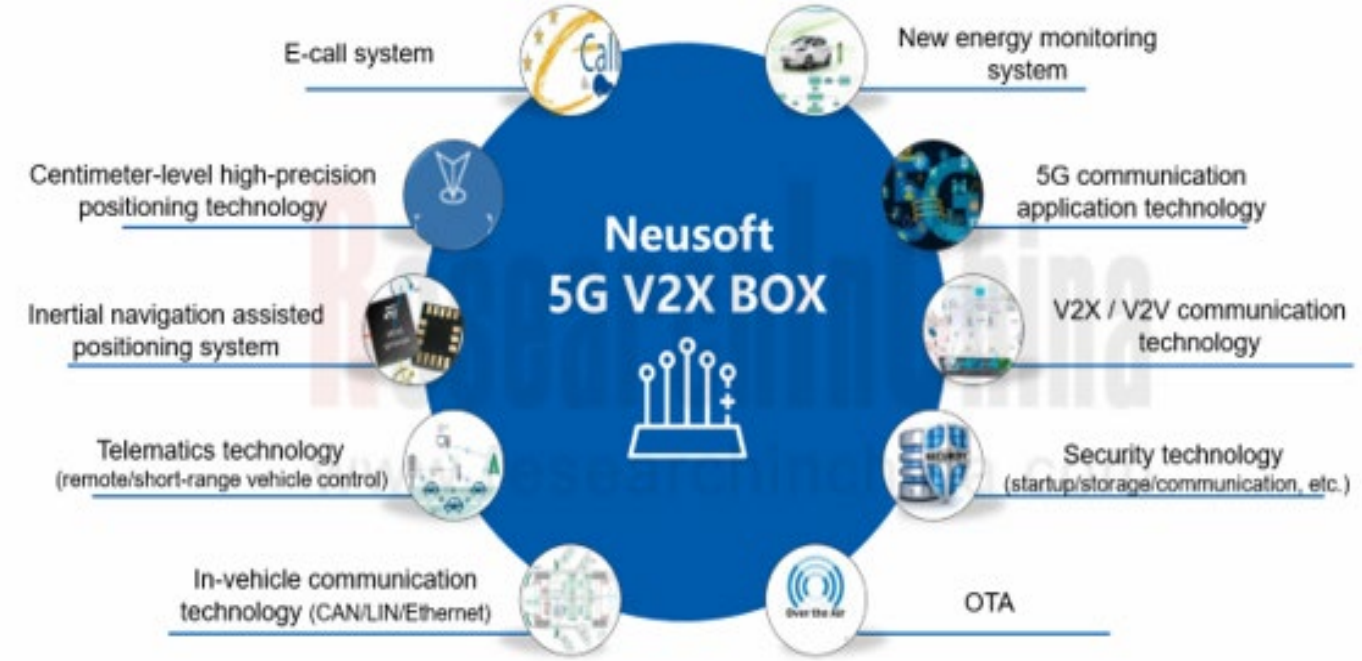
Neusoft Smart Antenna

Product form trends of T-Box: V-Box

2. V-Box

T-Box communication modules evolve from single modules to integrated modules such as 4G+V2X and 5G+V2X, offering increasingly diversified functions, and bring out independent V-Box product forms.

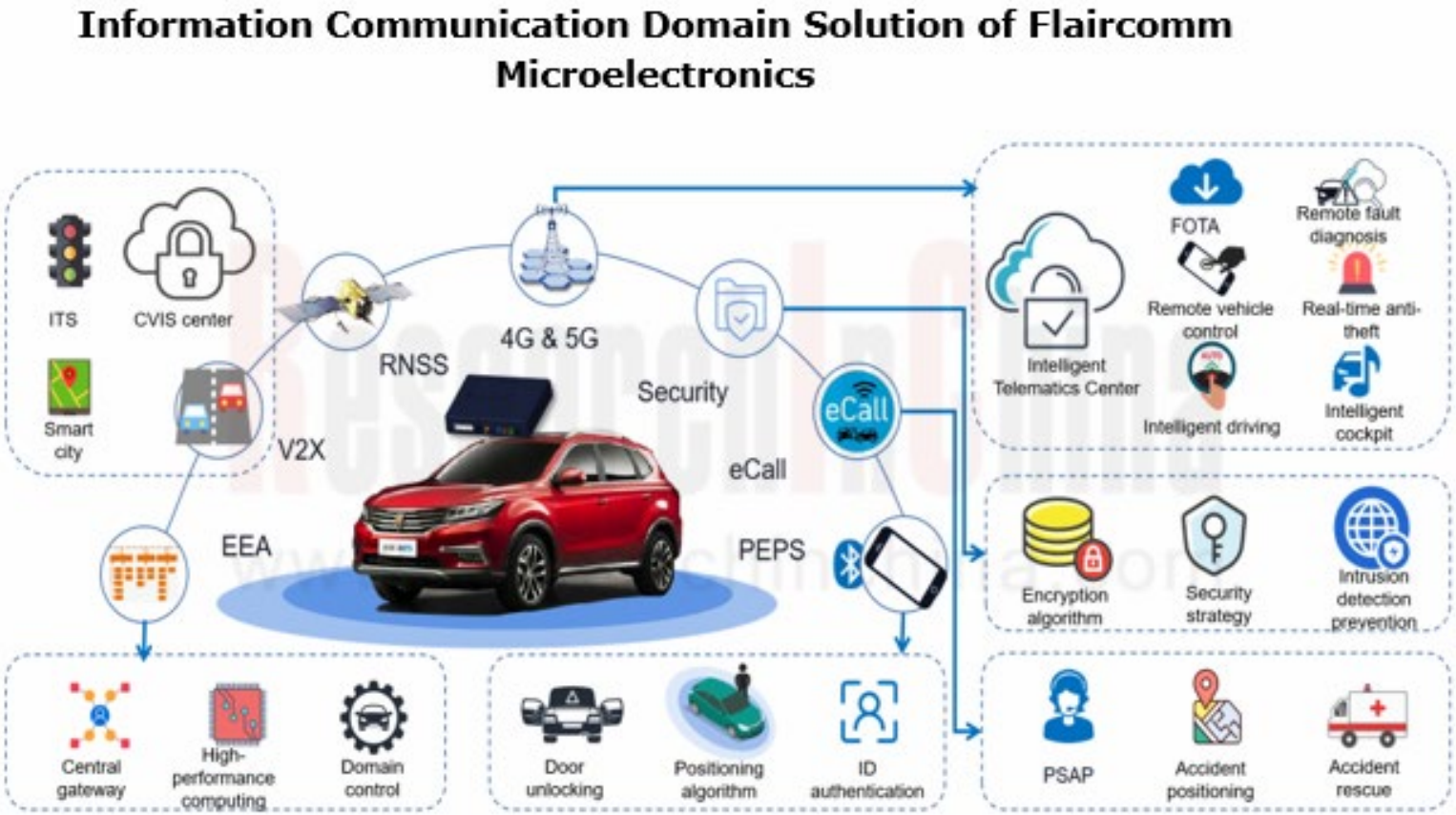
Neusoft 5G V2X BOX supports 5G NSA/SA communication, L1+L5 GNSS, C-V2X communication, Gigabit Ethernet technology, CAN FD communication, LIN communication, Bluetooth 5.0+ communication, WiFi 6 communication, RKE, TPMS communication, and ETC. Currently, Neusoft 5G V2X BOX has been mass-produced for Geely, Great Wall and other auto brands, and will be installed in dozens of mid- and high-end models of well-known OEMs, making it possible for more intelligent vehicles to achieve high quality, stable intelligent communication.



Product form trends of T-Box: Communication domain controller

3. Communication domain controller

As the automotive E/E architecture evolves from the distributed to the centralized, T-Box not only supports vehicle interior and exterior communication technologies such as 4G/5G, C-V2X, Bluetooth, UWB, and even 6G and satellite communications in the future, but also gradually integrates gateway, domain controller and other functions, evolving from a single electronic unit to an information communication domain controller and high-performance computing (HPC) platform. Flaircomm Microelectronics started the information communication domain controller project in 2018, which has been installed by SAIC and other OEMs. With continuous efforts on iteration and upgrade, the company introduced a new-generation self-developed connection computing platform (CCP) in 2021, which not only supports information and communication domain capabilities (e.g., 4G/5G, C-V2X, gateway routing and FOTA), but also offers high-performance computing and data & communication security capabilities. This product can be used as an entry-level HPC product.



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Contact

Beijing Headquarters

TEL: 010-82601561, 82863481
FAX: 010-82601570

Chengdu Branch

TEL: 028-68738514
FAX: 028-86930659

Website: ResearchInChina

WeChat: Zuosiqiche

zuosiqiche