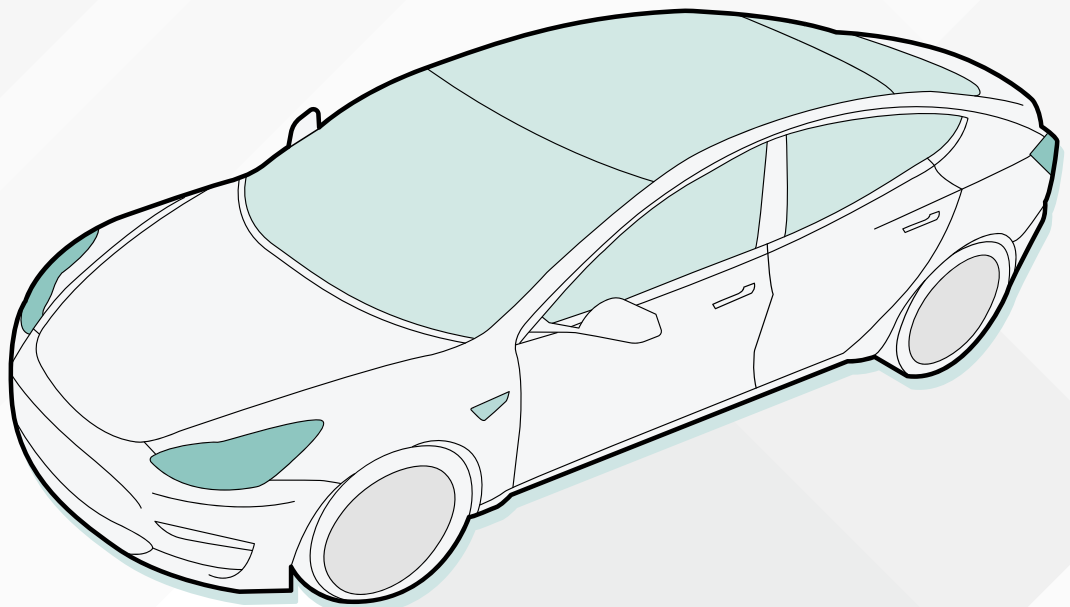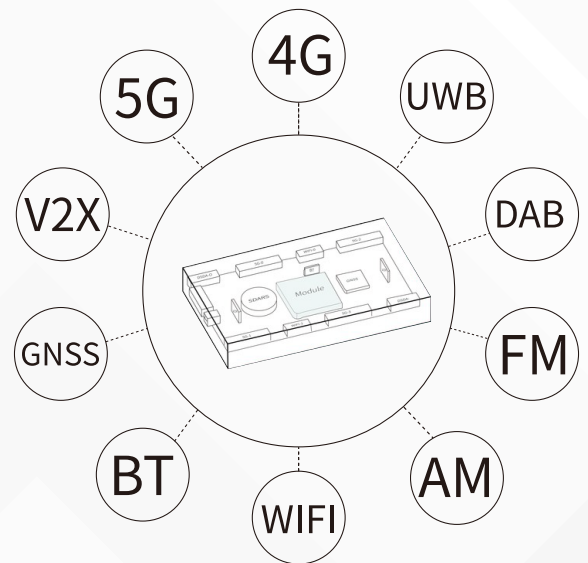# JOYNEXT
Integrated Digital Smart
Antenna Solution
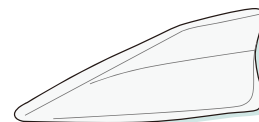
▶ JOYNEXT Integrated Digital Smart Antenna Solution

› Product Overview

With the development of 5G technology, it's the industry trend of **integrating Radio Frequency (RF), antenna and digital signal** processing to greatly improve communication performance and antenna efficiency.
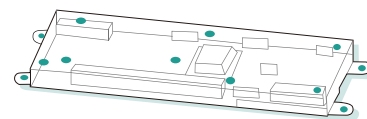JOYNEXT nVision A series product **- integrated digital smart antenna** possesses strong platform integration capacities, supports the integration of m ore than 10 kinds of vehicle services.This solution has been nominated by world famous OEMs for global markets, first SOP in 2024.

› Technical Details

- Variants: **Shark fin type, Flat box type**
- Thermal design: Adaptive for high temperature application, support 95°C working environment
- Innovative structure design: Meeting the needs of flexible deployment in the car
- Higher integration capability:
  - **5G+C-V2X** for all V2V/V2I standard scenarios and OEM customized scenarios, and high level scenario extendable (5G+C-V2X product variant)
  - **TBOX function** incl. connectivity, remote vehicle control, remote update, emergency assistance and roadside assistance, big data and safety function
  - **Digital key solution** based on BLE or UWB
  - **HD GNSS** capabilities
  - **Centimeter-level high-precision positioning** for an algorithm fusion of V2X, camera, HD map, etc., and provided to L3 autonomous driving
  - **Nearfield communication technologies** (UWB, NFC, BLE, Wi-Fi)
  - **Market specific tuner variants** (AM/FM, DAB)

Shark Fin Digital Smart Antenna
260*160*15mm(base BOX) + 65mm high (Shark Fin)

Flat Box Digital Smart Antenna
280*150*30mm

› Solution Advantages

High Scalability	One structure, multiple choices

- 5G
- 5G + V2X
- 5G + V2X + BT/UWB key
- 5G + V2X + BT/UWB key + High-precision fusion positioning
- 5G + V2X + BT/UWB key + High-precision fusion positioning + High-precision map
- 5G + V2X + BT/UWB key + High-precision fusion positioning + High-precision map + Tuner

High Adaptability	One product, multiple deployment

- NAD adaptable, SA415M/ SA515M/ SA522M/ MT2735/ SECTON/ MDM9x28/ MDM9150
- MCU adaptable, NXP/ Ti/ RENESAS
- 3GPP adaptable, R14/ R15/ R16
- V2X stack adaptable, C-V2X Day-1 & Day-2/ ITS-G5
- China/ USA/ EU certifications of adaptation

High Security & Safety	Adaptive to different safe requirement

- Support ASIL-B level function safety
- Info security (access management/ security boot/ cyber security/ storage/ security communication/ security interface)
- eCall, Passed EU certification
- Commercial Vehicle National Security Requirements
- Commercial Vehicle Environmental Testing Requirements

High Integrity	Adaptive to different integration requirements

- Shark fin integrated smart antenna design
- Flat box integrated smart antenna design
- Distributed integrated digital smart antenna design
- ECU standalone design

▶ Customer Case—World Famous OEM

Project Achievements

World's first mass produced NR-C-V2X version **(3GPP-R16)** product, which supports more advanced urban transportation collaboration and automated driving functions, and strengthens weak group protection
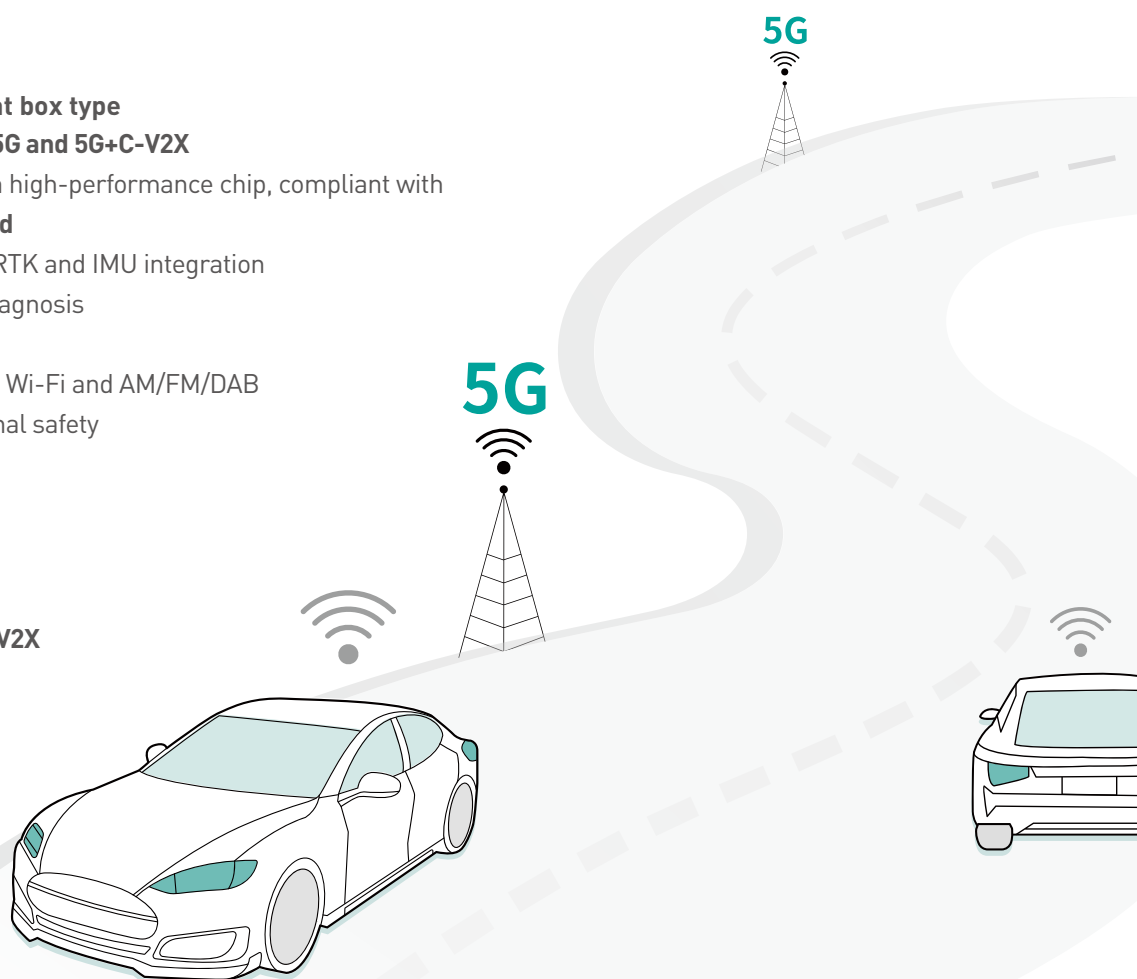
Support distributed and integrated multiple digital antenna designs, flexible adaption to various vehicle types, along with C-V2X/Tuner/eCall and other diversified functional demands from global markets

❯ Product Solution

- Variants: **Shark fin type, Flat box type**
- Configurations: **Standalone 5G and 5G+C-V2X**
- Qualcomm's next-generation high-performance chip, compliant with the **latest 3GPP R16 standard**
- **High-precision positioning**, RTK and IMU integration
- eCall, bCall, iCall and CAN diagnosis
- Wi-Fi, BLE and UWB
- Integration of 5G, GNSS, V2X, Wi-Fi and AM/FM/DAB
- Support security and functional safety
- Support OTA updates

❯ Application Scenarios

- Support **ETSI/CSAE defined V2X standard scenarios**

▶ About JOYNEXT

As a world leading technology innovator in the intelligent connected vehicle industry, JOYNEXT has been a Tier-1 supplier to the world's top OEMs for over two decades. The company has established and maintained long-term partnerships with leading automotive brands, including Volkswagen, Audi, NIO and Human Horizons.

JOYNEXT has always been committed to product development of intelligent cockpit, smart connectivity, autonomous driving and SaaS/SaaP. Meanwhile, the company plays an active role in the joint exploration and innovation through partnerships with Huawei, Microsoft, Brose, ARM and other high-quality ecological partners, to provide open, safe, and highly specialized intelligent and connected vehicle solutions.

By putting users at the center and focusing on targeted analysis, we are consistently working on intelligent connected vehicle solutions of vital importance to both customers and users.
Using V2X technology, we have achieved intelligent connectivity between vehicles, pedestrians, infrastructure, and even mobile devices, such as smartphones, for advancing the uptake of autonomous driving. In addition to our diverse range of exemplary cloud-based service features, we also deliver IoV-related SaaS/SaaP services, such as NavCore and AR Core.
Over ten million cars around the world are equipped with our in-vehicle infotainment (IVI) and smart connectivity technologies. Moreover, JOYNEXT is also one of the world's first 5G+C-V2X mass producers.

Balancing innovation with sustainability, we build our success on a strong foundation of product development and innovation, industrialization, connectivity services, automotive cyber security. We are dedicated to promoting the introduction of software-defined vehicles and delivering next-generation technologies and making continuous efforts in shaping future mobility for generations.

▶ Contact us

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