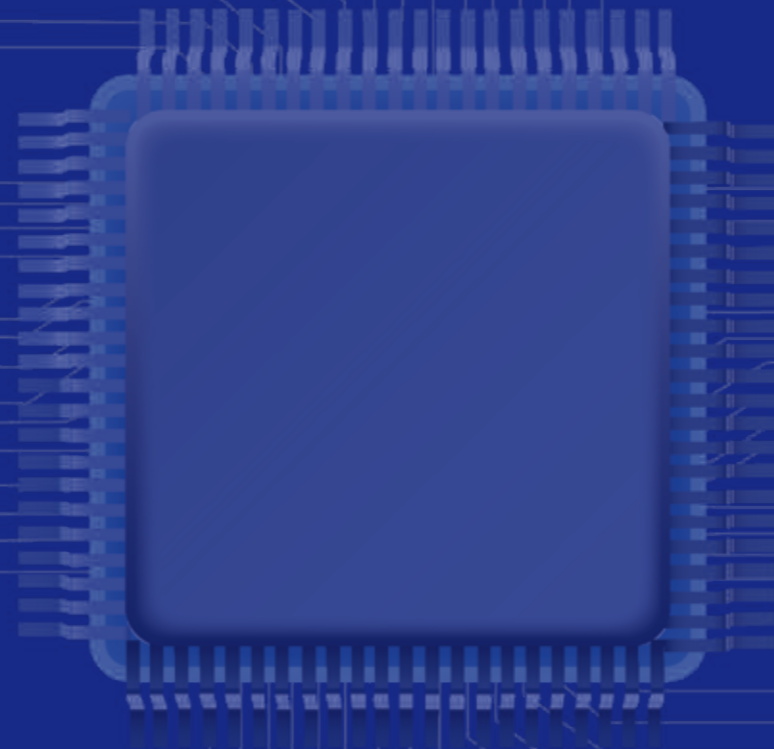




Pioneer in the UHF RFID Industry  
China's National Chip Enterprise



**国芯物联**  
NATION RFID

Pioneering Chip Research. Founded in

# 2005

Leading Chinese IoT R&D Enterprise

Focusing on the Cutting-edge Fields of  
Semiconductors

We are committed to adding Chinese “chips” to  
the intelligent world of digital interconnection.



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## Nation RFID

### **We are driving the development of China's IoT industry forward.**

Shenzhen Nation RFID Technology Co., Ltd. (hereinafter referred to as Nation RFID) is a global leading supplier of RFID reading and writing equipment, continuously promoting the research and commercial use of domestic independent intellectual property rights in RFID chips. Headquartered in Shenzhen Futian Jingji Binhe Age, we have established multiple branches and offices in Wuhan, Chengdu, Changzhou, etc., with businesses covering the globe.

Nation RFID has completed five rounds of financing, with investment institutions including Sincere Capital, Great Wall Fund, Oriental Fortune Capital, Shenzhen Futian Capital Operation Group, and the world's largest IoT development platform - Tuya Smart.

Nation RFID focuses on the development of IoT UHF RFID area, having undergone several technological iterations. The company supplies customers with UHF RFID reader chips, modules, and readers.

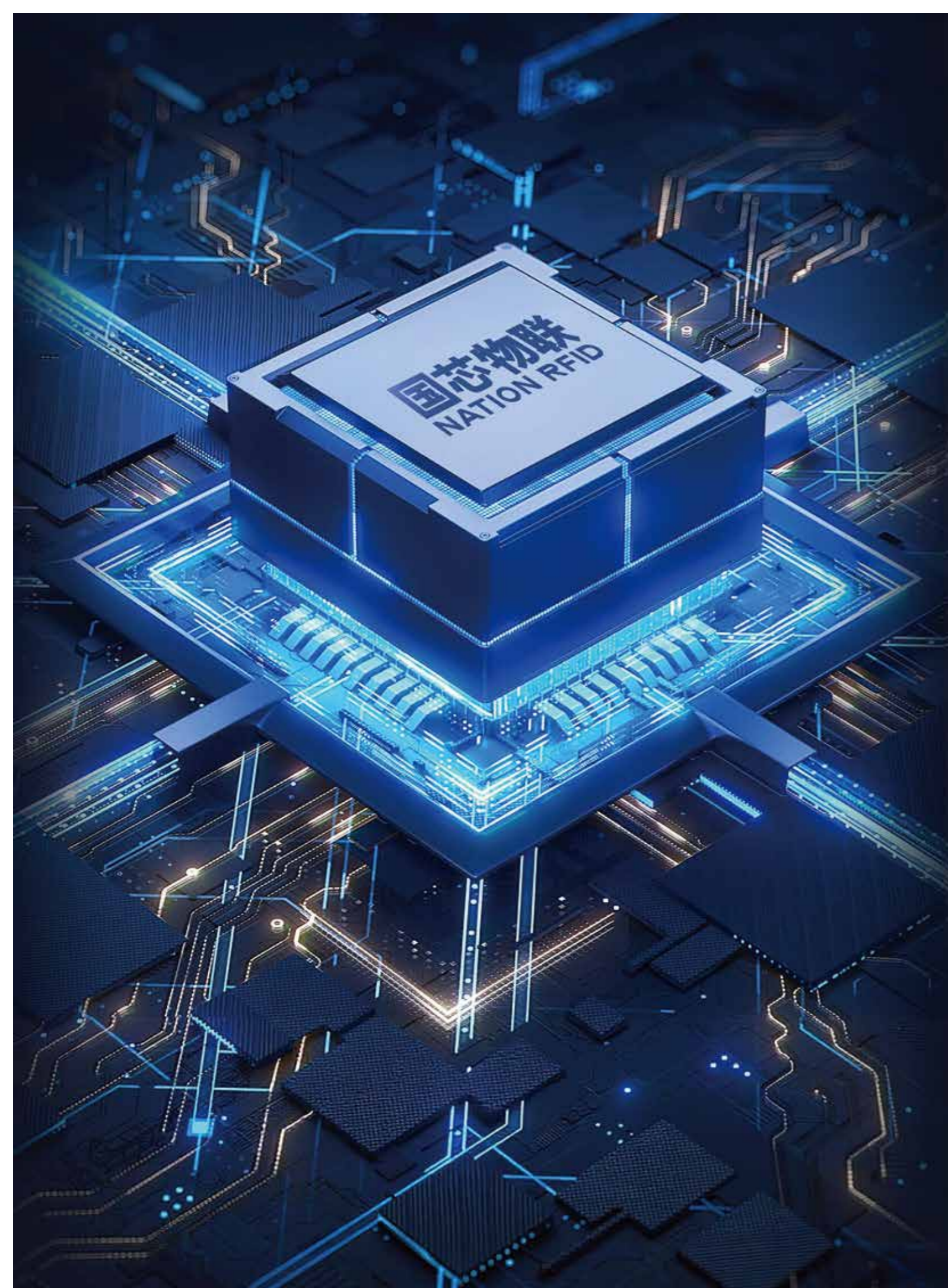
Our founding team members have nearly 20 years or more of industry experience, with most team members being R&D personnel who have experience in mass production of products from well-known enterprises in the industry.

In the mid-to-high-end RFID chip field, Nation RFID has launched the first domestic independent intellectual property rights RFID reader chip, breaking the monopoly of international well-known manufacturers in the mid-to-high-end market. Based on a completely independent design with intellectual property rights for low-power RFID chips, we have developed reader modules and successfully achieved mass commercial production.

Our products are aimed at industry markets such as smart cabinets, portal gates, handheld terminals, printers, drones, robots, cameras, and self-service checkout kiosks, etc.

They are deployed across warehousing and logistics, new retail, smart transportation, intelligent healthcare, digital finance, libraries and archives, smart manufacturing, defense, and fixed-asset management.

In the trend of the Internet of Things, Nation RFID is committed to accelerating the integration of RFID automatic sensing technology and the implementation of smart IoT application scenarios, contributing to the localization of China's chip industry.



# H HISTORY

## 2018

- Received investment from Zhicheng Capital in the angel round
- First reader chip project initiated
- Module product series launched successfully
- Established a postdoctoral chip R&D team
- Established a hardware product development team

## 2021

- Released China's first mid-to-high-end RFID reader chip
- Received investment from National Small and Medium Enterprise Development Fund (Oriental Fortune Capital) and Tuya Smart
- Entered the verification phase for self-developed modules based on RFID reader chips

## 2015

- Shenzhen Nation RFID Technology Co., Ltd. Founded

## 2024

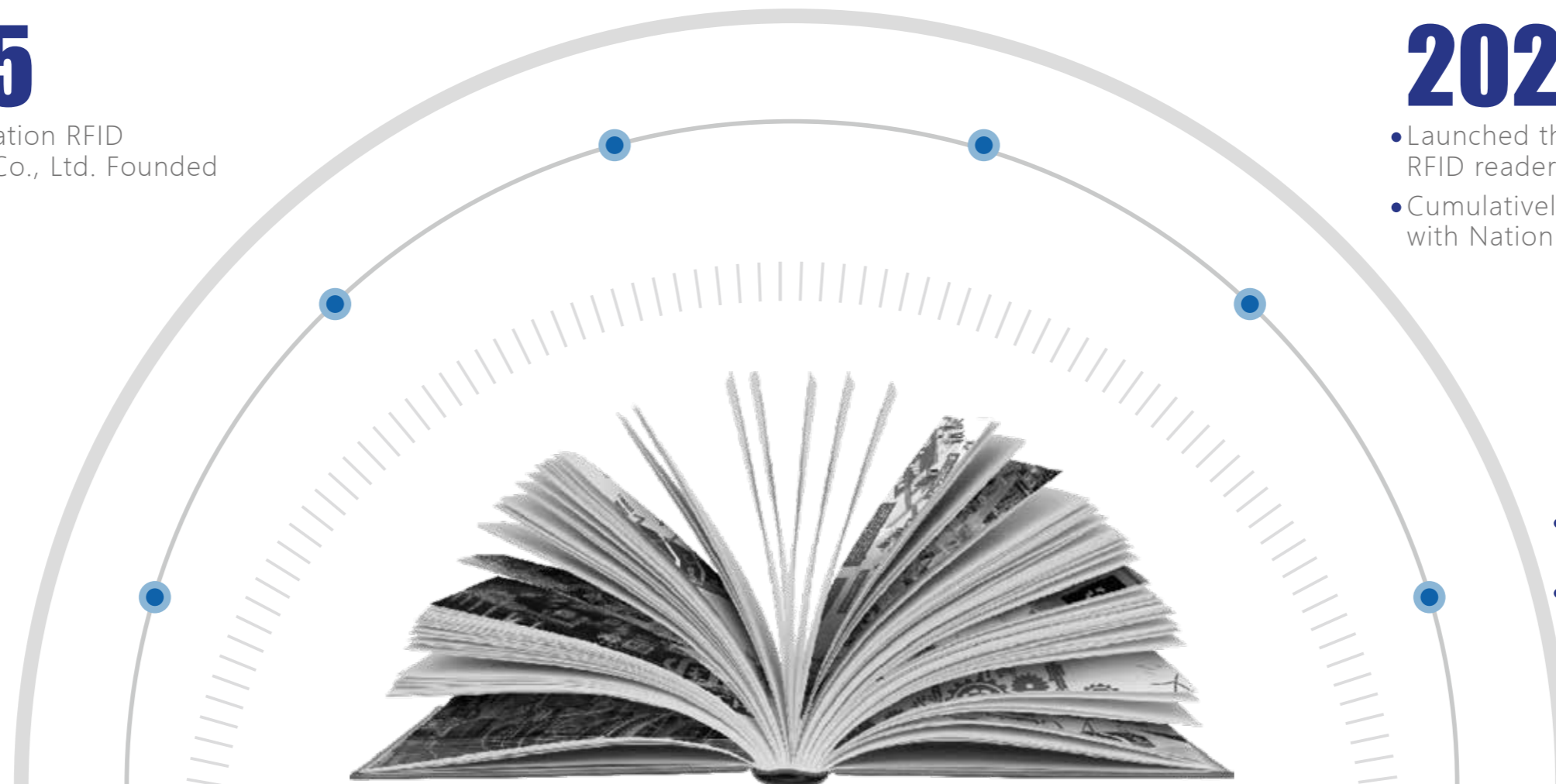
- Launched the third-generation RFID reader chip X3M1;
- Cumulatively 500,000 devices equipped with Nation RFID reader chips;

## 2005

- Started chip research

## 2025

- Secured investment from Shenzhen Futian Capital Operation Group;
- Released the world's fastest RFID reader chip



# V VISION&MISSION

## Corporate Culture

# A ADVANTAGE

**Vision** // Craft the chip of the Nation, and lead Chinese chips to the forefront of the world.

**Mission** // Innovate in the Chinese RFID industry, create a smart IoT system, build a smart world interconnected by all things

**Values** // Integrity, Value, Simplicity, Efficiency

**Philosophy** // Technology as the foundation, integrity above all

### Technical Advantages

- Passive RF design technology
- Chip security encryption technology
- Wireless communication algorithm technology
- Passive RF application technology
- Low-power memory design technology
- Custom low-power ASIC design technology

### Team Advantages

- Masters and doctors from domestic and international first-class universities
- Digital, algorithm, and system R&D teams
- RF technology R&D team with over 15 years of experience
- Chip architecture and RF analog R&D teams

### Market Advantages

- Backed by over 8 professional investment institutions
- A leading enterprise in China's RFID chip field
- Ranked among the top 3 in the global UHF module market
- Awarded "Most Investable Enterprise" for 6 consecutive years
- The only domestic enterprise with R&D capabilities for dual UHF RFID chips

### Product Advantages

- Product line covers RFID chips, modules, and readers
- Provides customized products to meet customers' personalized needs
- Original diversified combination mode with significant cost advantages
- Equipped with a robust logistics system for fast delivery
- Strategic cooperation with TSMC ensures stable and reliable product performance

# H HONOR


- National High-Tech Enterprise
- 68 software copyrights
- 32 utility model patents
- 39 chip layout protections
- 45 invention and appearance patents
- ISO9001:2015 Quality Management System Certification
- ISO14001:2015 Environmental Management System Certification
- 43 certifications including national standards, FCC, CE, TELEC, RoHS, and military standards



# K KEY CUSTOMERS

**20** 20 Years of Exploration in the RFID Chip Field

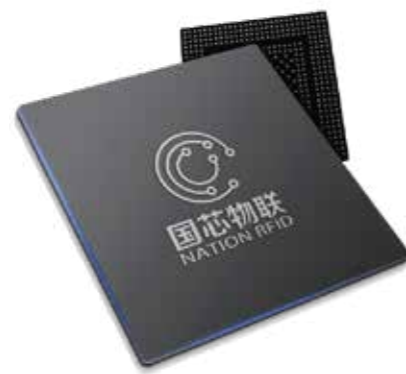
**100** 1 Million self-developed RFID chips and modules are installed in various devices




## GXR-03 — UHF RFID Reader Chip

The GXR-03 is Nation RFID's third-generation RFID reader chip, with globally leading technology. This chip uses the world's most advanced processes and low-power circuit technology. It has higher integration and a smaller size. The main advantages include enhanced cancellation performance (suitable for worse VSWR antennas), optimized low-noise frequency synthesizer (PLL), and optimized baseband signal processing algorithms. It can be applied to more scenarios with high performance requirements, such as retail, logistics, industrial production lines, and intelligent transportation.

Nation RFID's third-generation reader chip converges CMOS processes, with a wide operating frequency range from 840MHz to 960MHz. It also integrates a local oscillator and a Cortex-M4 processor, providing excellent performance in processing and frequency adjustment. The port receiving sensitivity is -83dBm@33dBm, 1% PER, ensuring reliable data transmission. Using a single-chip reader solution, the module size can be reduced while maintaining high performance, and it fully enjoys independent intellectual property rights.



### Independent Intellectual Property Rights

Design personnel with over a decade of industry experience, have accumulated exquisite analog and digital design skills and thoroughly mastered the core technology.

### Ultra-low Power Consumption Design

Adopting the RF CMOS Process and Low-power Circuit Design Methods optimizes the chip's overall power consumption.

### Flexible and Simple Application

Communication uses a simple SPI interface, widely applicable to most controllers, providing great flexibility for application development.

### Highly Expandable

Supports multiple protocol development and various protocol parameter customizations.

### Leading Sensitivity

With 33dBm transmission power, the receiving sensitivity is lower than -83dBm, which can give integrated devices excellent RF performance.

### Continuous High Stability

A detailed test plan and complete verification process have been designed to ensure the continuous and efficient operation of the chip.

Product Name	UHF RFID Reader Chip
Model	GXR-03

#### Product Specifications

Protocol standards	Supports protocol standard EPC C1 GEN2/ISO18000-6C
--------------------	---

Modulation	PR-ASK, DSB-ASK
------------	-----------------

Decoding Methods	FMO, Miller 2/4/8
------------------	-------------------

Read Speed	>500 times/second
------------	-------------------

Sensitivity (Chip End)	-93dBm @0dBm
------------------------	--------------

Op. Frequency	840MHz - 960MHz
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Forward Data Link Rate	40 ~ 160khz
------------------------	-------------

Return Data Link Rate	40 ~ 640khz
-----------------------	-------------

#### Operating

Working	-40°C~+80°C
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Storage	-40°C~+85°C
---------	-------------

#### Features

Built-in High-speed MCU,

Optimized Low-noise Frequency Synthesizer,

Fast SJC Algorithm,

Supports Multiple Frame Format Decoding,

Variable High-order Chebyshev Filter,

Universal Wireless Communication Transceiver Architecture,

Supports Adaptive Echo Speed Adjustment,

Enhanced Cancellation Performance,

Optimized Baseband Signal Processing Algorithm.

#### Illustration

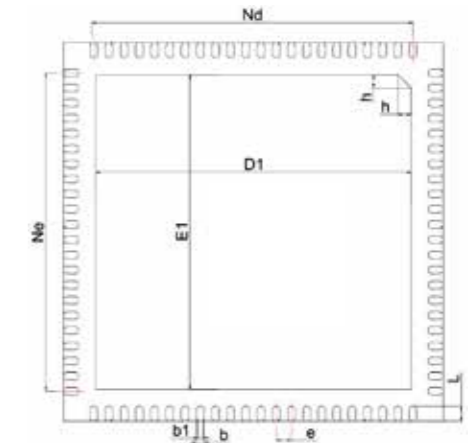


Figure 1



Figure 2



Figure 3

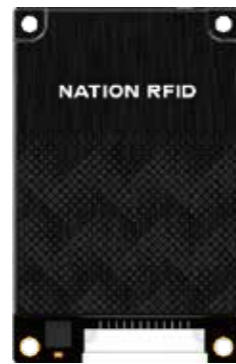


Figure 4

## N701 — 1-Port UHF RFID Module

The N701 is a specialized high-performance UHF RFID module designed by Nation RFID for fixed, handheld and integrated reader applications. This module is equipped with MMCX Antenna Port and supports a high RF output of up to 33dBm, enabling a read range of up to 20 meters, showcasing its superior capabilities. The core platform components use Nation RFID's high-performance integrated RFID reader chip, integrating analog RF front-end and baseband digital signal processing modules.

It provides a rich set of standardized SDK development packages and interfaces, allowing users to integrate quickly in a short time. Using independent molding and full aluminum casting, the appearance is exquisite, and the heat dissipation performance is excellent. The N701 is an ideal solution for businesses seeking to enhance their RFID capabilities in challenging environments such as warehousing, logistics, apparel, and production line management.



### High Compatibility

Supports multiple development languages and development environments, and provides a rich set of standardized SDK development packages and interfaces.

### Excellent Heat Dissipation Performance

Adopts a full aluminum alloy appearance and large-area heat dissipation contact surface design, with good heat dissipation performance, eliminating the need for external heat dissipation devices.

### Superior Read Performance

Adopts Nation RFID's independently designed analog RF circuit and optimized baseband signal processing algorithms, as well as anti-collision algorithms.

### Superior Stability

Can self-detect the CPU's operating status and antenna connection status, with outstanding anti-electromagnetic interference performance.

### Wide application range

This module can be quickly integrated into fixed and integrated readers and can also be applied to terminal projects.

### Continuous High Stability

Supports ISO 18000-6C/EPC C1G2 and ISO 18000-6B

Product Name	1-Port UHF RFID Module
Model	N701

#### Physical Specs

Dimensions	56.0mm×35.6mm×6.0mm
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#### Key Features

RF Air Int.	ISO 18000-6C/6B, EPC C1G2
	Temp/Humidity Prot. Sup., DRM, Simult. ID, Tag data filter, RSSI

#### Performance

Op. Frequency	FCC (US) 902-928MHz
	ETSI (EU) 865.6-867.6MHz
	SRRC-MII (CN) 920-925MHz
Output Power	33dBm±1dB (MAX)
Sensitivity	-86dBm
Power Adjust	Stepping at 1 dB
Modulation	DSB-ASK, PR-ASK
Cont. EPC Rd.	0-20M (Dep. on Config.)
Cont. EPC Wr.	0-10M (Dep. on Config.)
Read Speed	>500 times/sec

#### Interfaces

Interfaces	12 PIN FPC connector
RF Port	MMCX Antenna Port

#### Env. Specs

Op. Temp.	-20°C~ +70°C
Storage Temp.	-40°C~ +85°C
Humidity	10-95% RH NC

#### Illustration

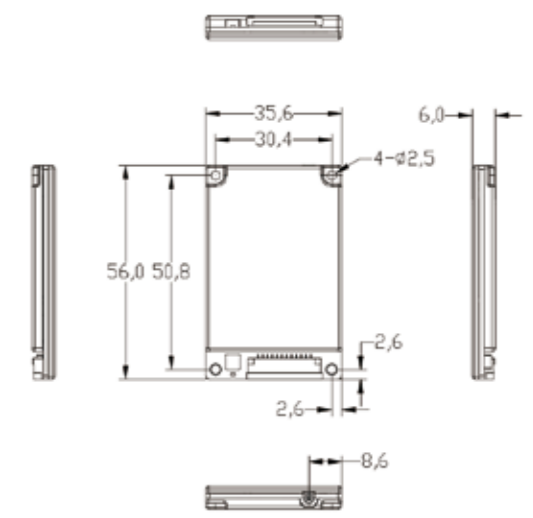


Figure 1



Figure 2



Figure 3



Figure 4

## N704 — 4-Port UHF RFID Module

The N704 is a high-performance RFID module designed specifically for fixed, integrated readers, and handheld applications. This module is equipped with four SMA antenna interfaces and supports up to 33dBm RF output, enabling a read range of up to 20 meters. The comprehensive performance is quite excellent. The core platform components use Nation RFID's high-performance integrated RFID reader chip, integrating analog RF front-end and baseband digital signal processing modules.

It provides a rich set of standardized SDK development packages and interfaces, allowing users to integrate quickly in a short time. Using independent molding and full aluminum casting, the appearance is exquisite, and the heat dissipation performance is excellent. It can be widely used in challenging application environments such as warehousing, logistics, apparel, and production line management.



### High Compatibility

Supports multiple development languages and development environments, and provides a rich set of standardized SDK development packages and interfaces.

### Excellent Heat Dissipation Performance

Adopts a full aluminum alloy appearance and large-area heat dissipation contact surface design, with good heat dissipation performance, eliminating the need for external heat dissipation devices.

### Superior Read Performance

Adopts Nation RFID's independently designed analog RF circuit and optimized baseband signal processing algorithms, as well as anti-collision algorithms.

### Superior Stability

Can self-detect the CPU's operating status and antenna connection status, with outstanding anti-electromagnetic interference performance.

### Wide Application Range

This module can be quickly integrated into fixed and integrated readers and can also be applied to handheld reader projects.

### Air Interface Compatibility

Supports ISO 18000-6C/EPC C1G2 and ISO 18000-6B

Product Name	4-Port UHF RFID Module
Model	N704

<b>Physical Specs</b>	
Dimensions	85.0mm×85.0mm×8.0mm
<b>Key Features</b>	
RF Air Int.	ISO 18000-6C/6B, EPC C1G2
	Temp/Humidity Prot. Sup., DRM,
	Simult. ID, Tag data filter, RSSI

<b>Performance</b>	
Op. Frequency	FCC (US) 902-928MHz
	ETSI (EU) 865.6-867.6MHz
	SRRC-MII (CN) 920-925MHz
Output Power	33 dBm±1dB (MAX)
Sensitivity	-86dBm
Power Adjust	Stepping at 1 dB
Modulation	DSB-ASK, PR-ASK
Channel Isolation	>30dB (between each port)
Cont. EPC Rd.	0-20M (Dep. on Config.)
Cont. EPC Wr.	0-10M (Dep. on Config.)
Read Speed	>400 times/sec
<b>Interfaces</b>	
Interfaces	15 PIN Terminal Connector
RF Port	SMA-K Antenna Port

<b>Env. Specs</b>	
Op. Temp.	-20°C~ +70°C
Storage Temp.	-40°C~+85°C
Humidity	10~95% RH NC

Illustration

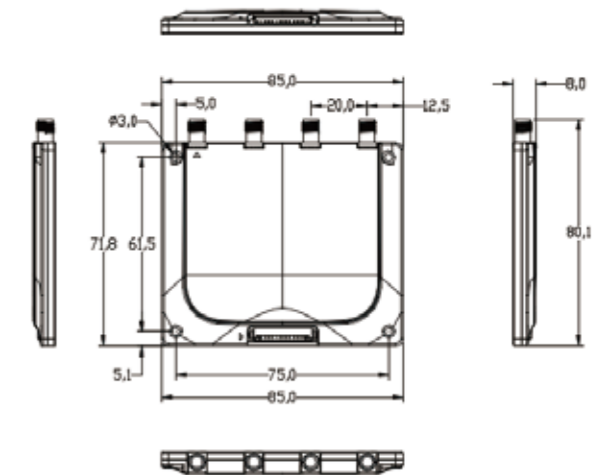


Figure 1

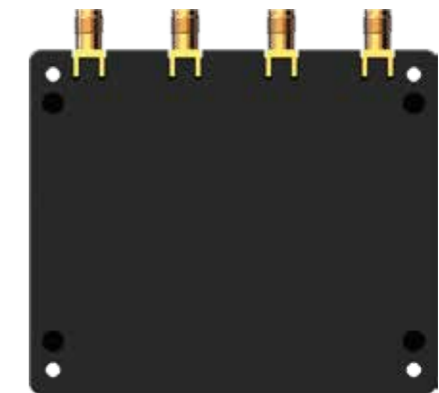


Figure 2



Figure 3



Figure 4

## iMax — High-End Intelligent Reader

iMax is engineered for complex application environments, featuring a quad-core 64-bit Cortex-A55 processor at 2.0GHz with 4GB RAM + 32GB ROM for powerful computing performance. It adopts the Nation RFID AI chip solution, fully compatible with EPC C1G2, ISO18000-6B/C protocols, supporting RSSI and tag angle of arrival phase detection for more precise identification. With receiving sensitivity up to -90dBm, high power output, and integrated AI for tag signal data processing, it ensures accurate and efficient operation.

iMax provides Ethernet, RS-232, RS-485, USB DEVICE, Wiegand interfaces, with built-in dual-band Wi-Fi and Bluetooth, supporting PoE power supply for stable transmission and flexible networking. The all-aluminum die-cast enclosure adapts to harsh environments from -40°C to +85°C. Suitable for warehousing & logistics, manufacturing, access control, and asset management.



### Nation RFID Reader Chip

Self-developed dedicated RFID AI chip with strong scalability and stable performance

### UHF Op. Frequency

FCC 902-928MHz,  
ETSI 865-868MHz,  
JP 916-920MHz

### Supports a variety of Air Interface Protocols

Supports ISO 18000-6C/6B and proprietary sensors protocols

### Exceptional RFID Performance

TMaximum 33dBm transmit power, -90dBm receiving sensitivity, integrated AI signal processing

### 800 High-speed Identifiers per Sec

800+ tags/second with optimized anti-collision algorithm

### Rich Connectivities

Provides Ethernet, RS-232, RS-485, and built-in dual-band Wi-Fi and Bluetooth wireless communication, with high-speed data transmission and stable performance

Product Name	High-end Intelligent Reader
Model	iMax

<b>Physical Specs</b>	
Dimensions	215mm×144.5mm×36.5mm
Weight	0.97kg
Protection Rating	IP32

<b>Key Features</b>	
CPU	4-core 64-bit Cortex-A55 2.0GHz
RAM+ROM	4GB RAM+ 32GB ROM
RFID Platform	Nation RFID AI Chip
RF Air Int.	ISO 18000-6C/6B, EPC C1G2, Temp/Humidity Prot. Sup.
Interfaces	Ethernet, RS-232, RS-485, USB, Wi-Fi, BLE, Wiegand

<b>Performance</b>	
Reader Architecture	Transmit-receive separated, 4T4R
Antenna Ports	Four TNC reverse polarity connectors
Operating Mode	Fixed/hopping selectable
Op. Frequency	840~960MHz
I/O Interface	4 Opto-coupler In, 4 Relay Out
Port Receive Sensitivity	<-90dBm @ 33dBm
RF Power Out	33dBm±1dB (MAX)
Power Adjust	Stepping at 1dB
Chan. BW	<200KHz
Freq. Stability	≤ ±20ppm
Read Range	0~30m (Dep. Config.)
Write Range	0~15m (Dep. Config.)
Read Speed	>800 times/sec

<b>Support Functions</b>	Supports RSSI and tag incidence angle phase detection. Supports antenna VSWR detection function.
--------------------------	--

<b>PSU Parameters</b>	
Power Adapter	AC Input 100V~240V, 50Hz ~ 60Hz
Whole Machine PSU	DC 9V~30V (> 60W)

<b>Operating</b>	
Working	-20°C to +85°C
Storage	-40°C to +85°C
Ambient Humidity	10%~95% RH NC

### Illustration



Figure 1



Figure 2

## G810 — Fixed Industrial Reader

The G810 is a four-port fixed UHF RFID reader independently designed and developed by Nation RFID. It uses an excellent architecture and powerful read/write algorithms, suitable for various complex application environments. The core platform components use Nation RFID's high-performance integrated RFID reader chip, integrating analog RF front-end and baseband digital signal processing modules. It fully supports mainstream UHF RFID air interface protocols such as EPC C1G2, ISO18000-6B/C, and GB/T29768-2013, with selectable output power from 0dBm to 33dBm.

The G810 features long read distance, fast speed, strong multi-tag recognition capabilities, strong anti-interference capabilities, high protection performance, and convenient installation and use. It is suitable for complex environments such as warehousing logistics and production manufacturing, especially for occasions with special requirements for machine size and performance. It can be widely used in manufacturing and supply chain management, digital warehousing management, commercial retail, access control management, asset management, intelligent transportation, and other fields.



### Nation RFID Reader Chips

Engineered for scalability, stability, and advanced functionality

### Versatile Applications

Optimized to meet the demands of various application environments

### Air Interface Compatibility

Supports ISO 18000-6C/EPC C1G2, ISO 18000-6B, and proprietary sensors protocols

### Ultra-high Channel Isolation

Up to -30dB, minimizing interference and enhancing read reliability

### Exceptional RFID Performance

Adopts an anti-collision algorithm to avoid mutual interference between tags, with a tag recognition rate of over 500 tags/sec. achieving efficient identification.

### Continuous High Stability

A detailed test plan and complete verification process have been designed to ensure the continuous and efficient operation of the chip.

Product Name	Fixed Industrial Reader
Model	G810

<b>Physical Specs</b>	
Dimensions	215.0mm×144.5mm×36.5mm
Weight	0.97kg
Housing Material	Aluminum
Protection Rating	IP55

<b>Key Features</b>	
RF Air Int.	ISO 18000-6C/6B、 EPC C1G2
	Temp/Humidity Prot. Sup
	Ethernet, RS-232,RS-485, USB-HID
	Wiegand, POE
<b>Support Functions</b>	Dense Reading and Writing Mode
	Antenna VSWR Detection Function
	Firmware Online Upgrade
	Tag Data Filtering

<b>Performance</b>	
Op. Frequency	840~960MHz
I/O Interface	4 Opto-coupler In, 4 Relay Out
Read Range	0~15m (Dep. Config.)
Write Range	0~8m (Dep. Config.)
Power Supply	DC 9V~30V (>30W)
Op. Power Consumption	13W ( When RF PowerOut 33dBm)
RF Power Out	33dBm±1dB (MAX)

<b>Operating</b>	
Working	-40°C~85°C
Storage	-40°C~90°C
Ambient Humidity	10%~95%RH NC

### Illustration



Figure 1



Figure 2

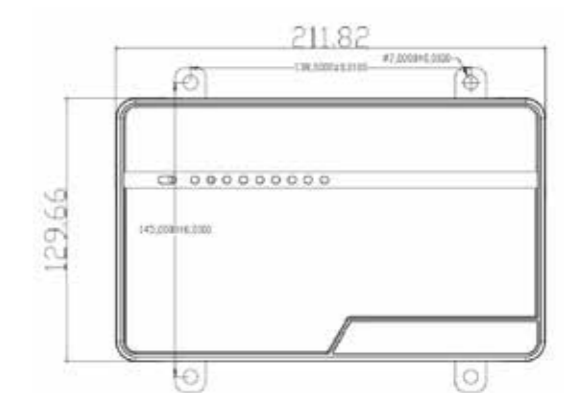
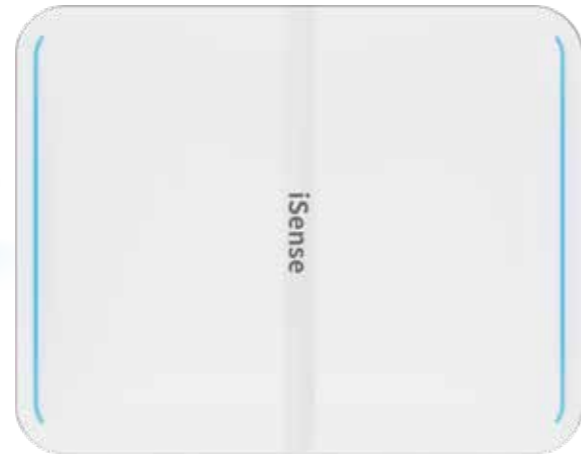


Figure 3

## iSense — Intelligent Reader System

iSense breaks through traditional design by integrating Nation RFID AI chip array. It innovatively adopts a transmit-receive separated 4T4R (four-transmit four-receive) reader architecture. This architecture not only enhances receiving performance but also enables acquisition of detailed and accurate carrier frequency, RSSI, and angle of arrival phase information from four receiving antennas during a single tag identification process.

Built-in powerful AI processing capability simultaneously enables bulk tag inventory, tag movement direction detection, and tag zone positioning functions. In typical access control scenarios, it supports multi-tag entry/exit inventory and movement direction detection.



### Nation RFID Reader Chip

Self-developed dedicated RFID AI chip with strong scalability, stable performance, and powerful functionality

### UHF Op. Frequency

FCC 902-928MHz  
ETSI 865-868MHz  
JP 916-920MHz

### Supports a variety of Air Interface Protocols

Supports ISO 18000-6C/6B and proprietary sensors protocols.

### Superior Anti-Crosstalk

Ultra-high channel isolation up to -30dB, resolving RF crosstalk between antenna ports

### AI Intelligent Algorithm

Real-time acquisition of tag RSSI signals and incident phase angles from four receiving channels

### 1T4R Support

One-transmit four-receive with each port configurable for transceiver/receive-only mode switching

Product Name	Intelligent Reader System
Model	iSense

<b>Physical Specs</b>	
Dimensions	564mm×445mm×37mm

Enclosure	Aluminum alloy frame, acrylic panel
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Weight	2kg
--------	-----

<b>Communication Interfaces</b>	
	TCP/IP, RS-232, Wi-Fi & Bluetooth

Alarm Method	Audible and visual alarm, status indicator
--------------	--

<b>PSU Parameters</b>	
-----------------------	--

Power Supply	PoE or power adapter
--------------	----------------------

AC input	100V~240V, 50Hz~60Hz
----------	----------------------

DC output	12V/5A
-----------	--------

PoE	IEEE 802.3af/at
-----	-----------------

<b>Key Features</b>	
---------------------	--

CPU	4-core 64-bit Cortex-A55 2.0GHz
-----	---------------------------------

GPU	ARM G52 2EE, supports OpenGL ES 1.1/2.0/3.2
-----	---

NPU	1 Tops@INT8/INT16, supports mainstream framework conversion
-----	---

Memory	4GB RAM + 32GB ROM
--------	--------------------

Operating System	Operating System
------------------	------------------

<b>RFID</b>	
-------------	--

Architecture	Transmit-receive separated, 4T4R
--------------	----------------------------------

RF Air Int.	EPC C1G2, ISO18000-6B/C
-------------	-------------------------

Op. Frequency	840~960MHz
---------------	------------

RF Output Power	0~33dBm, 1dB step
-----------------	-------------------

Sensitivity	Stepping at 1 dB
-------------	------------------

<b>Operating</b>	
------------------	--

Working	-20°C to +70°C
---------	----------------

Storage	-40°C to +85°C
---------	----------------

Ambient Humidity	10%~90% RH NC
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<b>Illustration</b>	
---------------------	--



Figure 1



Figure 2



Figure 3

## RF-N2105 — Desktop UHF Reader

The RF-N2105 is a desktop reader for tag data programming, with excellent protection and read and write performance, optimized for automatic batch tag data write and single write operations. The complementary software can be used to quickly import and export Excel sheets data, for rapid, intelligent and automatic data entry, and increased operation efficiency. The USB connectivities, and support for virtual keyboard input, are available for customers to achieve a variety of complex applications in different modes.



### Classic industrial form factor

A simple and atmospheric design style

### Simple operation

USB connectivity & virtual keyboard operation

### Reliable performance

Integrated antenna for nearfield application & minimum misread

### Robust tag data operation

Automatic data operation, DEMO software, ease to dispense, program and filter

### Easy to develop applications

Provide SDKs, support variety of development languages, provide C#, Android, Java and

### Safer to use

Direct data encryption ensures the tag operation security.

Product Name	Desktop UHF Reader
Model	RF-N2105

<b>Physical Specs</b>	
Dimensions	150mm×110mm×19mm
Weight	0.5kg
IP rating	IP32

<b>Standards supported</b>	
RFID Air	ISO 18000-6C/6B
	EPC C1G2
	GB/T 29768-2013 (Optional)
	GJB 7377.1-2011/7377.1-2018A

<b>Performance characteristics</b>	
Frequency	840-960MHZ
Demo	Yes
SDK	Yes
Routines	C#, Android & Java
Encryption	Yes
Output power	0~30dBm (24dBm)
Read distance	0-60cm (config. dependent)
Write distance	0-60cm (config. dependent)

<b>Physical characteristics</b>	
Com port	TYPE-C
Power supply	USB

<b>Operating</b>	
Operating	-20°C to 55°C
Storage	-40°C to 80°C
Humidity	10-95% RH, non condensing

Illustration



Figure 1



Figure 2



Figure 4

## G2 - UHF RFID Handheld Reader

The G2 is a comprehensive upgrade based on the G2 model, equipped with a new generation X3M1 chip, offering >33dBm transmission power and < -86dBm high sensitivity reception. Its RFID performance is significantly enhanced, supporting various protocols such as EPC C1 GEN2/I-SO18000-6C, ISO18000-6B, and GJB7371-2011(2018), providing broader compatibility.

With a reading distance of up to 25 meters and a batch reading speed of over 800 tags per second, combined with high-performance quad-spiral antennas, it improves reading accuracy and stability, suitable for high-density label identification scenarios. Equipped with a 4000mAh lithium polymer battery for long-lasting operation, meeting the needs of long-term field operations. The ergonomic design ensures comfortable handling for extended use without fatigue.

The G2 is suitable for warehouse logistics, retail management, asset tracking, industrial manufacturing, and other fields, assisting enterprises in efficient operations.



Product Name	UHF RFID Handheld Reader
Product Model	G2
<b>Performance</b>	
Octa-core CPU	MT6765X Octa-core 64-bit 2.3GHz high-performance
RAM+ROM	4GB+64GB
Expandable	Micro SD (TF) card expandable up to 256GB
Operating System	Android 13.0
<b>Data</b>	
WLAN	Dual-band 2.4GHz/5GHz,supports IEEE 802.11 ac/a/b/g/n/d/e/h/i/j/k/r/v protocols
WWAN	2G: GSM (850/900/1800/1900MHz) 3G: WCDMA (850/900/1900/2100MHz) 4G: FDD: B1/B3/B4/B7/B8/B12/B20 TDD: B38/B39/B40/B41
Bluetooth	Supports Bluetooth 5.0+BLE, transmission distance 5-10
GNSS	Supports GPS, Galileo, Glonass, and Beidou
<b>Physical</b>	
Overall Size	179mm x74.5mm x150mm (including handle)
Overall Weight	<750g (depending on device configuration)
Display	5.5-inch, resolution 720×1440
Screen Brightnes	>500cd/m2
Touch Screen	Supports multi-touch
Battery Capacity	Rechargeable polymer battery 7.6V 4000mAh (equivalent 8000mAh), removable, standby time >350 hours, Charge time <3 hours using standard power adapter and
Expansion Card	NANO SIM card x1, TF card x1 (optional PSAMx2), POGO Pin POGO Pin x1
Communication	Type-C 2.0 USB x 1, supports OTG function
Speaker	>92db (tested at a distance of 10cm)
Audio	Speaker (monophonic), microphone, earpiece
Main Button	Home button, Delete button, Back button, Confirm button
Side Button	Silicone buttons: Power key, Volume +/- key, Scan key x2,
Sensor	Gravity sensor, light sensor, distance sensor, vibration motor
<b>Language/Input</b>	
Input Method	English, Pinyin, Wubi, handwriting input, supports soft
Language	Simplified Chinese, Traditional Chinese, English, Korean, Malaysian, Singaporean language packs, etc.

<b>Data Collection</b>	
Barcode Collection	
2D Scanning	N6602-W2
Support for 1D	UPC/EAN, Code128, Code39, Code93, Code11, Interleaved 2 of 5, Discrete 2 of 5, Chinese 2 of 5, Codabar,
Barcode Types	Postal barcodes: USPS Planet, USPS Postnet,China Post, Korea Post, Australian Postal, Japan Postal, Dutch Postal (KIX), Royal Mail, Canadian Customs, etc.
PDF417, MicroPDF417, Composite, RSS, TLC-39,Datamatrix, QR code, Micro QR code, Aztec, MaxiCode, HanXin, etc.	
<b>Camera</b>	
Rear Camera	13MP high-definition camera
Supports auto-focus, flash, anti-shake, macro photography	
Front Camera	2MP color camera
<b>NFC</b>	
Operating	13.56MHz
Protocol Standards	Supports ISO14443A/B, 15693 protocols, etc.
Read/Write	2cm-5cm
<b>UHF</b>	
Reader chip	Nation RFID 3rd Generation UHF reader chip
Op. Frequency	920-925MHz China, 902-928MHz American,
Product Name	865-868MHz (ETSI EN 302 208) European
Other Multi	Other multi-country frequency standards (customizable)
Protocol Standards	Supports protocol standard EPC C1 GEN2/ISO18000-6C
Antenna	Circular polarization antenna (4.65dBi)
Operating	Up to 20 meters
Multi-tag Reading	>500 tags per second (circular polarization)
<b>Operating</b>	
Working	-20°C to 55°C
Storage	-40°C to 70°C
Ambient Humidity	5% to 95%RH (no condensation)
Drop Specification	Can withstand a 1.2-meter drop to marble from all six sides
Tumble Test	0.5m continuous rolling, after rolling on six contact surfaces,
Protection Rating	IP65
<b>Accessories</b>	
Standard	Adapter, data cable, protective film, instruction manual



## H1 — UHF RFID Sled

The H1 is equipped with Nation RFID's 3rd-generation X3M1 RFID reader chip, with a maximum transmission power of 33dBm and a reception sensitivity of < -84dBm. Combined with a 3.5dBi circularly polarized antenna, it achieves a reading speed of over 1000 tags per second, with a reading range exceeding 10 meters. It uses a 4500mAh 21700 standard battery pack, which users can replace themselves to ensure long-lasting operation. It can be equipped with options such as the Zebra E4107 and Newland N1 2D barcode scanners to meet diverse scanning needs. The LED status indicator provides clear visibility, allowing real-time monitoring of battery level, Bluetooth connection status, RFID reading status, and barcode scanning status.

Suitable for warehouse management, retail logistics, asset inventory, industrial manufacturing, and other scenarios, providing efficient and convenient RFID identification solutions.



### Nation RFID Reader Chip

Utilizes Nation RFID's 3rd-generation UHF RFID chip, engineered for scalability, stability, and advanced functionality

### Exceptional RFID Performance

Adopts the best RFID circuit design and RFID signal optimization algorithms to achieve a read rate of over 5s00 tags per second.

### Supports a variety of Air Interface Protocols

Supports ISO 18000-6C/6B and proprietary sensors protocols.

### Integrated 3.5dBi Antenna

Significantly enhances the signal strength and coverage range of the RFID reader, enabling effective reading of tags at greater distances.

### UHF Op. Frequency

FCC 902-928MHz, ETSI 865-868MHz, JP 916-920MHz

### Adjustable Output Power

Adjustable 0-33dBm output power, ensuring +1dBm accuracy in read range

Product Name	UHF RFID Sled
Model	H1
<b>Physical Specs</b>	
Overall Size	174.6mm x 80.5mm x 135mm
Overall Weight	< 750g (depending on device configuration)
Battery Capacity	4500mAh 21700 standard battery pack.
	Customers can purchase and replace standard batteries themselves
LED Indicator	Battery level, Bluetooth connection status RFID reading status, Barcode Scanning Indicator
Communication	BLE5.0 Bluetooth interface USB 2.0 HID plug-and-play interface
Side Button	Bluetooth on/off button, Power button
<b>Performance</b>	
<b>Barcode Scanning</b>	
2D Scanning	Optional support for Zebra E4107 and Newland N1 2D barcode scanners
1D	UPC/EAN, Code128, Code39, Code93, Code11 Interleaved 2 of 5, Discrete 2 of 5
Barcode Types	Postal barcodes: USPS Planet, USPS Postnet China Post, Korea Post, Australian Postal Japan Postal, Dutch Postal (KIX), Royal Mail Canadian Customs, etc.
2D	PDF417, MicroPDF417, Composite, RSS, TLC-39 Datamatrix, QR code, Micro QR code, Aztec, MaxiCode, HanXin, etc.
<b>UHF RFID</b>	
Chip	Nation RFID's Third-generation X3M1 chip
Op. Frequency	920-925MHz China, 902-928MHz American 865-868MHz (ETSI EN 302 208) European, 916-920MHz Japan
<b>Protocol Standards</b>	
	Supports EPC C1 GEN2/ISO18000-6C

Antenna	Circular polarized antenna (3.5dBi)
Operating	Up to 10 meters
<b>Multi-tag Reading</b>	
	>500 tags per second (circular polarization)
RF Power Out	33dBm
Sensitivity	< -84dBm

Illustration



Figure 1



Figure 2

## A7 - UHF RFID Portable Reader

The A7 is a sleek, all-in-one ultra-high frequency (UHF) RFID reader designed for portability and ease of use, boasting a plug-and-play functionality that ensures seamless integration. It features a proprietary UHF RFID reader chip from Nation RFID and integrates a single-fed point ceramic RFID antenna, delivering exceptional performance and dependable solutions for a variety of applications.

With just a USB Type C interface, users can effortlessly manage the module's operations via an extensive API function library. The RF-A7 module is versatile and can be tailored to fit any application scenario, providing a robust solution for your specific needs.

The RF-A7's compact design cleverly integrates the radio frequency front end, controller, and additional circuits into a miniaturized module, facilitating straightforward integration into a wide array of devices and systems. This streamlined approach simplifies the development process, allowing for a more agile and efficient deployment of RFID technology.



### Nation RFID Reader Chips

Powered by Nation RFID's proprietary UHF RFID chip GXR03

### Exceptional RFID Performance

Optimized to meet the demands of various application environments

### Supports a variety of air interface

Supports ISO 18000-6C/6B and proprietary sensors protocols

### RSSI

Enabling the evaluation and optimization of RFID communication quality

### On-The-GO

Directly connected to mobile devices to achieve On-The-Go (OTG) functionality

### Tag Data Filter

Filters RFID tag data based on user criteria for pertinent insights

Product Name	UHF RFID Portable Reader
Model	A7

<b>Physical Specs</b>	
Size	62.5mm×48.0mm×9.0mm
Weight	37g

<b>Features</b>	
	ISO 18000-6C/6B
Air Protocol	EPC C1G2
	Temperature sensors protocols
	Humidity sensors protocols
Interface	Type C, Bluetooth

<b>Performance</b>	
Op. Frequency	902 to 928MHz
RF Power	0 to 18dBm
Mode	Fixed/Hopping
Modulation	PR-ASK, DSB-ASK
Decode	FM0, Miller 2/4/8
Read Range	0 to 0.3m (config. dependent)
Write Range	0 to 0.1m (config. dependent)
Tag Speed	>100 reads/sec
Multi-Tag	100 tags/3 sec
Base Rate	40k, 160k, 320k, 400k
Power	Type C
Consumption	+5.5V
	1.2W @ +18dBm

<b>Env.</b>	
Op. Temp	-20°C to 70°C
Store Temp	-40°C to 85°C
Humidity	10-95% RH NC

### Illustration



Figure 1



Figure 2



Figure 3

## GX——UHF RFID Antenna

This antenna is a purpose-built accessory designed exclusively for our UHF RFID readers. Leveraging our in-house expertise in RFID chips and reader technology, the antenna achieves seamless integration and optimized performance when paired with our readers. This synergy delivers stable and efficient RF signal support for diverse applications including warehouse logistics, asset management, and industrial production lines.

The GX series antennas are available in two models, 6dBi and 9dBi, they both operating in the 902MHz~928MHz UHF frequency band. Engineered to perfectly match the RF parameters of our readers, the antennas feature a VSWR  $\leq 1.3$  and 50 $\Omega$  characteristic impedance, significantly minimizing signal transmission loss for optimal RF performance. The circular polarization design effectively addresses orientation-related tag reading challenges, enabling reliable omnidirectional identification. Equipped with standard SMA RF connectors for plug-and-play compatibility with our readers, the antennas offer flexible cable routing options (rear or side exit) and versatile mounting solutions (bracket or side screw fixation) to accommodate diverse deployment scenarios.



Product Name	UHF RFID Antenna
Model	GX-RA6

Performance	
Frequency Range	902MHz~928MHz
VSWR	$\leq 1.3$
Impedance	50 $\Omega$
Gain	6dBic
Polarization(°)	Circular polarization
Connector	SMA-Female
Cable Exit	Rear (Side exit optional)
Mounting	Bracket mounting (screw mounting for side exit)
E-plane HPBW	90°
H-plane HPBW	90°
Dimensions	130mm×130mm×20mm
Weight	0.32kg
Housing material	ABS

Env. Specs	
Op. Temp.	-20°C~85°C
Storage Temp.	-40°C~85°C
Humidity	10-90% RH

Product Name	UHF RFID Antenna
Model	GX-RA9

Performance	
Frequency Range	902MHz~928MHz
VSWR	$\leq 1.3$
Impedance	50 $\Omega$
Gain	9dBic
Polarization(°)	Circular polarization
Connector	SMA-Female
Cable Exit	Rear (Side exit optional)
Mounting	Bracket mounting (screw mounting for side exit)
E-plane HPBW	60°
H-plane HPBW	60°
Dimensions	258mm×258mm×30mm
Weight	0.65kg
Housing material	ABS

Env. Specs	
Op. Temp.	-20°C~85°C
Storage Temp.	-40°C~85°C
Humidity	10-90% RH

# C Contact



**If you have any questions regarding the products, technical support, or cooperation of Nation RFID, please contact us through the following channels.**

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