

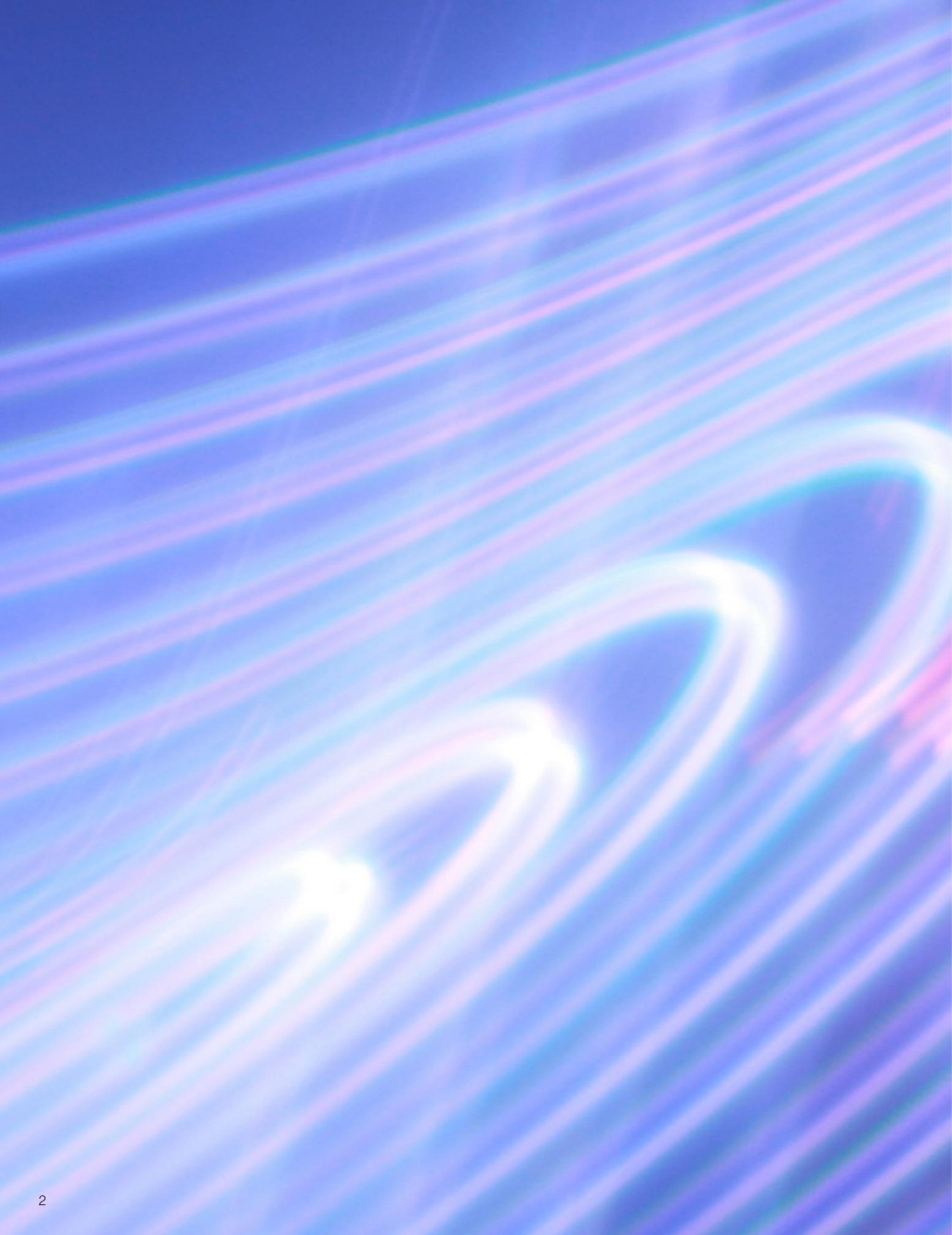
# Company Profile & Products



**NEXTWAVES INDUSTRIES**

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# Innovating tomorrow powering today

In today's era, wave transmission technology and the Internet of Things (IoT) are standing at the threshold of a tremendous opportunity to transform the world, like how the Internet changed the way we communicate and connect in the 1990s. These are not only merely technologies but also the foundation of a new era where everything is connected, and where humans and systems can interact and communicate intelligently and automatically. With RFID technology, we see a great mission in transforming operations and optimizing key industries such as logistics, retail, and supply chains. Nextwaves Industries aims not only to improve processes, but also to build systems that help businesses manage and optimize resources, minimize risks, and enhance control.

The mission of Nextwaves Industries is not only to develop deep technology, but to lead the transformation. We believe that for Vietnam to thrive in the digital era, we must build a foundation of technological self-reliance from chips to wave transmission devices to reduce dependence on foreign technologies.

We are committed not only to creating products and solutions, but also to driving breakthroughs that open new opportunities across all sectors of society. We are committed to continuously striving toward a future of digital inde-

pendence and prosperity for Vietnam, where technology becomes a powerful tool to strengthen the nation's position on the global stage, drive sustainable development, and deliver long-term benefits to the community.



**Khanh Nguyen**  
Chief Operation Officer

A handwritten signature in black ink, appearing to read 'Khanh Nguyen', positioned below the printed name and title.

## Key Objectives

- Master the complete RFID value chain from hardware design to software integration.
- Develop proprietary semiconductor capabilities to manufacture RFID chips.
- Deliver adaptable technology solutions that resolve complex operational challenges.

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Leading RFID innovation for a self-reliant digital Vietnam.

## Key Milestones

Nextwaves Industries was established in 2023 with a vision to master the physics of connectivity and deliver world-class wave transmission technology. After successfully deploying solutions across 12 countries and securing partnerships in demanding markets like North America and Europe, we are shifting our focus toward pioneering the next era of global IoT infrastructure.

Our strategic roadmap now centers on advancing a comprehensive suite of wireless technologies, from ultra-precise RFID systems to emerging Bluetooth and telecom-grade solutions. By integrating AI-powered optimization and reconfigurable antenna designs, Nextwaves is dedicated to engineering the scalable, intelligent networks that will power the future of international logistics, retail, and smart manufacturing.

- ▶ We are committing to the highest global standards and environmental certifications to ensure our technology meets the requirements of every market we enter.



# Company Overview

## Company History

We were founded because we refused to accept that Vietnam should only be a consumer of technology, rather than a creator of it.

In 2023, we and a team of engineers looked at the RFID landscape in Vietnam and saw a critical gap. The market was flooded with imported devices—expensive, rigid, and often ill-suited to the unique environments of local industries. When a system failed or needed customization, businesses were left waiting for support from halfway around the world. We realized that true digital transformation cannot happen if you are dependent on “black box” technology you do not control.

We started with a single, difficult goal: to master the invisible. While others imported finished hardware, we invested in the core physics of wave transmission. We built our own labs, ran our own electromagnetic simulations, and spent thousands of hours in testing to prove that Vietnamese engineering could compete with the world’s best.



### Regional Market Integration

Expanding our footprint across Southeast Asia by deploying ultra-precise RFID systems in major logistics and retail hubs.

During this period, we will finalize the integration of AI-powered optimization into our software suite, ensuring our networks are the most scalable in the region.

### Semiconductor Autonomy

A pivotal year marking the successful commercialization of our first proprietary RFID silicon chips. By mastering the core physics of wave transmission and semiconductor design, Nextwaves achieves full technological independence, securing a robust supply chain for Vietnam and our global partners.

- ▶ Nextwaves Industries: Engineering a self-reliant digital future.

### Global IoT Infrastructure

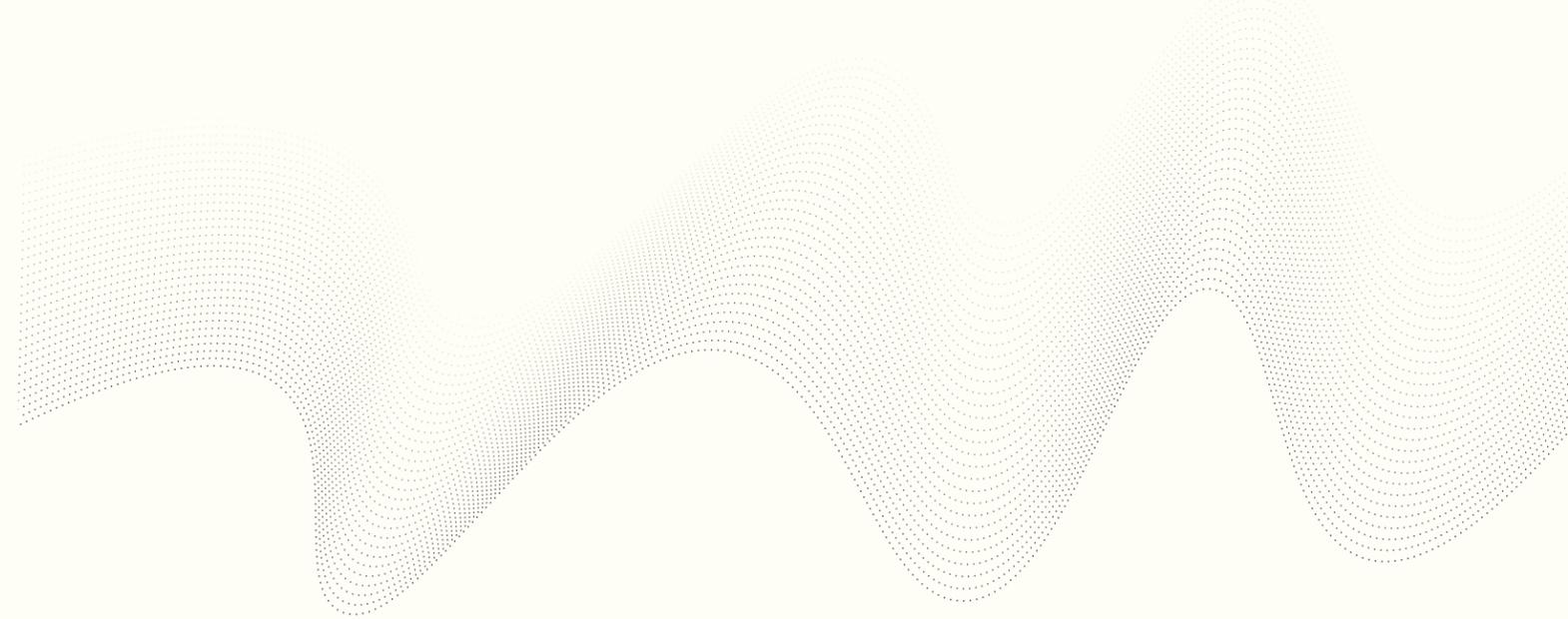
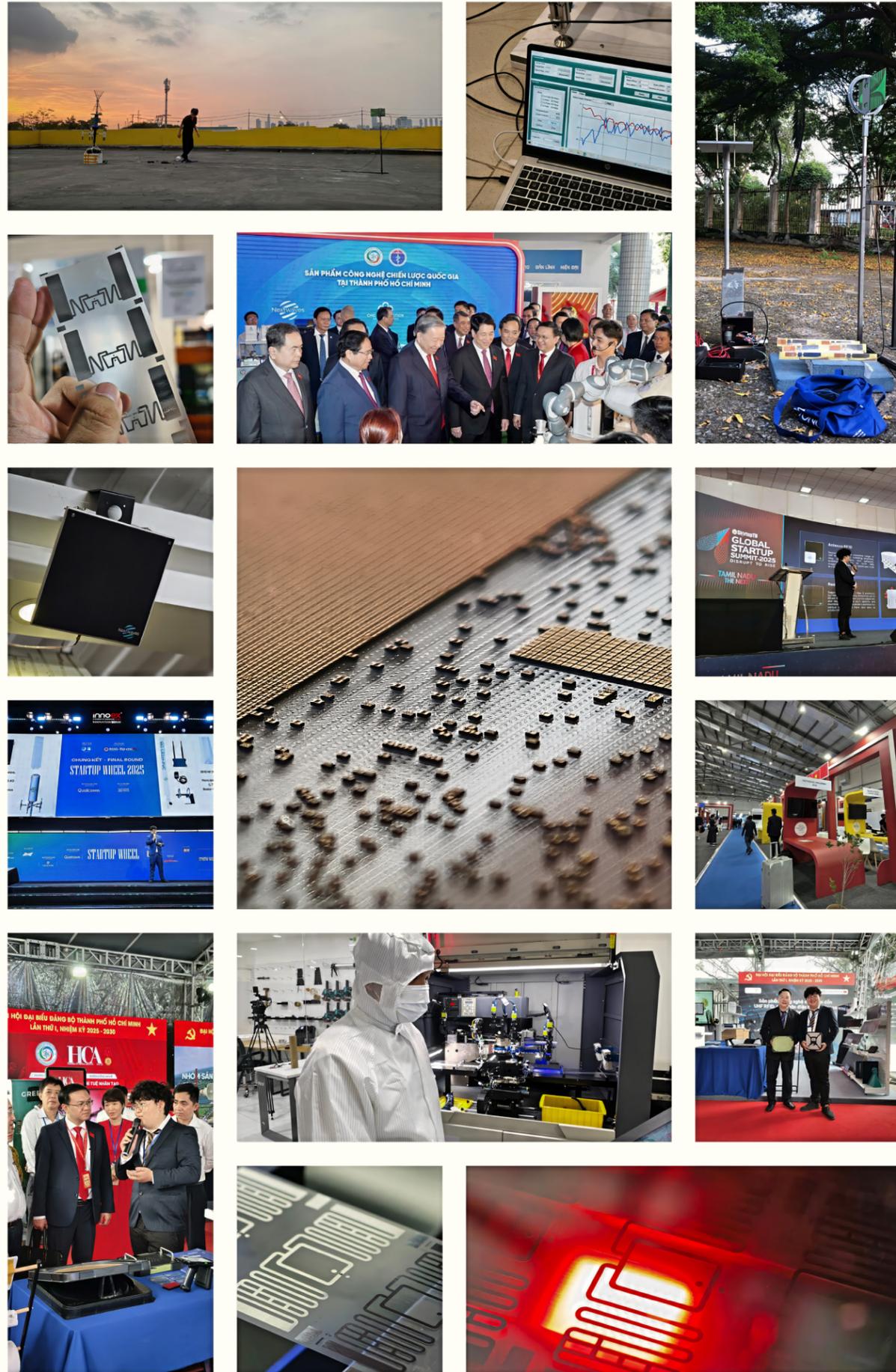
Establishing Nextwaves as a primary architect of global IoT standards.

## Mission

To bridge the physical and digital worlds through superior, scalable antenna technology.

## Vision

To set the global standard for innovation in the smart infrastructure and IoT markets.



# Problem Statement

## Understanding the Challenge

Deploying RFID is actually really difficult because you are trying to force a messy physical world to act like a perfect digital system. It sounds easy to just stick a tag on a box, but the reality is a constant battle against physics. You have metal racks acting like mirrors that bounce signals all over the place, and you have liquids that absorb radio waves completely. Plus you usually need to catch all this data while items are moving at high speeds on a conveyor belt or through a dock door. We see a lot of companies fail because they underestimate these hostile environments. They try to use generic off-the-shelf components that worked fine in a clean lab, but those things fall apart the moment you put them in a dusty, noisy warehouse. When the hardware isn't built for the specific environment, you end up with noise instead of data. You get stray reads from the wrong truck or the system misses items entirely, and that just leaves your operations team trusting the system less than they trusted their old manual checklists.

Because of that, Nextwaves Industries approaches this differently. We realized early on that you can't settle for "good enough" hardware. We manufacture top-tier industrial gear that is engineered specifically to handle those edge cases and punch through the interference that stops standard plastic readers. But we don't stop there. We combine that rugged hardware with our own intelligent software that knows how to filter out the chaos. We designed the whole system to distinguish a real asset from a signal reflection instantly. By controlling everything from the manufacturing of the antenna to the logic in the app, we eliminate the variables that usually cause failure. We don't just sell a reader. We deliver the actual truth about your inventory so you can finally trust your data.



**Nghia Nguyen**  
Chief Technology Officer

Precision in the Chaos

# Nextwaves Services

## What We Deliver

We don't just resell generic catalog parts; we build the gear ourselves. We manufacture ruggedized RFID hardware engineered specifically for "hostile" environments where standard plastic readers fail: places dense with metal infrastructure, liquids, or extreme temperatures. We design our antenna geometry to punch through interference, ensuring you get signal where others only get noise.

End-to-End Solution Architecture Most RFID projects fail because vendors treat hardware and software as separate silos. We treat them as one ecosystem. Because we control the entire stack—from the manufacturing of the physical device to the logic in the application—we can tune the system to your specific floor plan. You get one partner who owns the result, eliminating the finger-pointing that happens with other vendors.



► Your Architects for the RF Environment

### Intelligent Solutions with RFID (Precision at Scale)

Raw data is noisy. Our high-throughput software filters chaos instantly, validating transactions and converting millions of stray reads into clean, real-time business logic that your ERP can actually trust.

### Industrial RF Antenna (Speed & Data Integrity)

We manufacture industrial-grade RFID gear engineered for maximum sensitivity and speed. While commodity readers struggle with density, our equipment ensures 99.9% read accuracy in the most demanding, high-volume environments.

### RF Engineering Consulting (Optimization First)

Radio frequency is invisible and unforgiving. We don't guess. We map your facility's electromagnetic environment to identify interference and dead zones upfront. We solve the physics challenges first to guarantee reliable performance later.

### Custom Engineering (Tuned to Your Reality)

Generic gear yields generic results. If your assets require unique antenna patterns or specific form factors, we build them. We tailor the technology to your operations so you never have to compromise on speed.

# Solution Overview



## 01

### Smart Retail Solutions

We deploy high-performance infrastructure that enables frictionless self-checkout and 99% inventory accuracy.

## 02

### Intelligent Inventory Automation

We replace periodic manual counts with continuous, automated truth. Our system monitors stock levels in real-time, eliminating human error.

## 03

### Smart Manufacturing WIP Visibility

Gain real-time visibility into Work-in-Progress (WIP). Track raw materials through every assembly station to identify bottlenecks, automate quality control, and ensure on-time production.

## 04

### Logistics Supply Chain Visibility

Automate the shipping and receiving process at the dock door. Validate thousands of items on moving pallets in seconds without manual scanning.

## 05

### RTI Asset Management

Monitor the location and cycle counts of reusable pallets, bins, and high-value equipment to prevent hoarding and reduce operational costs.

## Industry Overview

Our Hyperion ecosystem is industry-agnostic but purpose-built for high-velocity environments. We bridge the silos between Manufacturing, Logistics (3PL), and Omnichannel Retail, creating a unified digital thread that serves the entire lifecycle of a product—from the factory floor to the customer's hands.



By digitizing every item, we deliver 99% stock accuracy, eliminating the 'Inventory Distortion'.

# Smart Retail with RFID

## The Inventory Crisis

The global retail industry loses \$1.8 trillion annually to "Inventory Distortion" — a combination of out-of-stocks and overstock markdowns. Traditional inventory methods rely on manual barcode scanning, which is labor-intensive and error-prone, capping average inventory accuracy at just 63-65%. This "data darkness" creates a disconnect between digital channels and physical stock, making true Omnichannel execution impossible.

RAIN RFID (UHF) solves this by digitizing physical assets. Unlike barcodes, RFID enables non-line-of-sight bulk reading, allowing staff to audit 20,000+ items per hour with 99.5% accuracy. This creates a real-time "Digital Twin" of the store, ensuring the right product is available for the right customer, every time.

## Key Applications

- **Apparel & Footwear:** Managing high-velocity SKUs with complex size/color variations (SGTIN tracking) to ensure on-floor availability.
- **Luxury & Cosmetics:** Utilizing cryptographic tag authentication to prevent counterfeiting and manage "grey market" diversion.
- **Supply Chain Logistics:** Automating inbound/outbound verification at distribution centers to achieve 100% shipping accuracy.

## Why RFID Wins

- **Vs. Barcodes:** RFID is 25x faster. Barcodes require line-of-sight and individual scanning; RFID reads entire boxes instantly.
- **Vs. Computer Vision:** RFID is privacy-safe and lower cost. Vision systems struggle with folded items or dense racks; RFID reads through them.
- **Vs. EAS:** RFID is intelligent. Legacy alarms just beep; RFID tells you exactly which item is being stolen for data-driven loss prevention.



# Strategic Business Case

## Financial Impact (The Economic Drivers)

Implementing RFID is not just an operational upgrade; it is a direct contributor to the bottom line. By shifting from error-prone manual counting to automated digital accuracy, retailers unlock significant capital and revenue streams that were previously hidden by inefficiency.

- **Revenue Growth (+5% to +15%):** Directly correlates to improved On-Shelf Availability. We eliminate "Phantom Inventory" (items the system thinks you have, but you don't), preventing lost sales and ensuring customers find what they want.
- **Labor Efficiency (+96%):** Manual barcode counts are slow and expensive. RFID enables a 96% reduction in counting hours, allowing you to redeploy staff from "counting stock" to "serving customers."

## Strategic Value (Why Now?)

Beyond immediate financial returns, RFID creates the structural foundation necessary for modern retailing. It bridges the gap between physical stores and digital expectations, enabling capabilities that are impossible with legacy barcode technology.

- **Omnichannel Enabler:** Profitable execution of BOPIS (Buy Online, Pickup In-Store) requires absolute inventory trust. RFID provides the real-time accuracy needed to fulfill digital orders from store stock without the risk of cancellations.
- **Loss Intelligence:** Move from generic alarms to data-driven insights. RFID identifies exactly what is leaving the store (e.g., "3x Black Denim Jackets"), allowing you to optimize merchandising and security protocols based on actual theft

## Implementation Roadmap (3 Steps to Success)

- **Phase 1: Pilot (4 Weeks):** Validate hardware tuning and establish baseline ROI in 3-5 controlled stores.
- **Phase 2: Source Tagging:** Move tagging upstream to the factory, ensuring items arrive pre-digitized to eliminate store labor.
- **Phase 3: Full Scale:** Enterprise-wide rollout with deep ERP integration and activation of advanced automation (Self-Checkout).



By giving a digital identity to every physical asset, we empower businesses to move from reactive guessing to proactive.

# Smart Inventory with RFID

## Industry Overview

The retail sector is pivoting from “reactive” manual counting to “proactive” automated visibility. Traditional inventory management relies on human labor and line-of-sight barcode scanning, which is the single largest point of failure in the supply chain, resulting in 65% accuracy and massive labor costs.

Intelligent Inventory Automation utilizing RAIN RFID removes the human bottleneck. by digitizing physical assets, we enable an “Always-On” inventory system. Automated readers capture thousands of data points per second without manual intervention, driving accuracy to 99%+ and transforming stock management into a continuous, data-driven process rather than a periodic chore.

## Key Applications

- **High-Velocity Retail:** Environments with rapid stock turnover where manual counting cannot keep pace with sales (e.g., Fast Fashion).
- **Complex Supply Chains:** Operations requiring automated verification of inbound/outbound shipments to prevent vendor fraud.
- **Omnichannel Hubs:** Stores acting as fulfillment centers that require absolute data confidence to automate online order routing.

## Competitive Landscape

- **Manual Barcodes:** High labor cost, slow data velocity, and prone to “phantom inventory” errors.
- **Visual/Camera AI:** Struggles with density (items behind items) and requires expensive processing power for simple counting.
- **RFID Automation:** The only scalable solution for non-line-of-sight bulk reading, enabling total visibility at a fraction of the cost of vision systems.



# Strategic Business Case

## Financial Impact (The Automation Dividend)

Transitioning to an automated system shifts inventory management from a cost center to a profit driver. By eliminating the manual labor required for stock visibility, retailers unlock immediate OpEx savings while simultaneously boosting top-line revenue through better availability.

- **Labor Reallocation (+96% Efficiency):** Automation reduces inventory audit times from days to minutes. Staff are redeployed from low-value counting tasks to high-value customer service.
- **Revenue Uplift (+5% to +15%):** Automated replenishment alerts ensure shelves are never empty. When customers find the product, conversion rates increase immediately.

## Strategic Value (Data-Driven Operations)

Beyond cost savings, automation builds the structural foundation for the “Store of the Future.” It provides the real-time data layer necessary to execute complex business strategies that manual systems simply cannot support.

- **Omnichannel Certainty:** Automating stock levels allows you to guarantee BOPIS (Buy Online, Pickup In-Store) availability, eliminating the brand damage caused by cancelled orders.
- **Loss Intelligence:** Automated exit gates identify specific stolen SKUs in real-time (e.g., “3x Red Jackets”), enabling data-driven merchandising and security decisions.
- **Supply Chain Transparency:** Automated scanning at every transition point (Factory -> DC -> Store) creates a flawless digital audit trail, reducing shrinkage and disputes.

## Implementation Roadmap

- **Phase 1: Pilot (4 Weeks):** Validate hardware read-zones and establish baseline ROI metrics in 3-5 controlled stores.
- **Phase 2: Source Tagging:** Move tagging to the manufacturing stage, ensuring 100% of inventory arrives pre-digitized and ready for automation.
- **Phase 3: Full Scale:** Enterprise rollout with deep ERP integration and activation of automated readers (Overhead, Portals).



We replace manual tracking with real-time automated data, eliminating production bottlenecks

# Smart Manufacturing with RFID

## The Visibility Gap

Modern factories operate at breakneck speeds, yet critical data often moves at the speed of paper. “Black Holes” in production—where the location and status of orders are unknown—cause bottlenecks, unplanned downtime, and massive inefficiencies.

Industrial RFID bridges the gap between the physical production line and the digital ERP. By embedding digital identity into parts, carriers, and tools, manufacturers achieve real-time WIP (Work-in-Process) visibility. This allows for the automated tracking of every production stage without manual scanning, ensuring that the right parts arrive at the right station at the exact right time (JIT).

## Key Applications

- **Automotive Assembly:** Tracking thousands of unique parts and chassis through paint shops and assembly lines to ensure custom build configurations.
- **Electronics Manufacturing:** Managing high-value components and ensuring strict ESD (Electrostatic Discharge) compliance and traceability.
- **Heavy Industry:** Tracking durable assets, molds, and tools across vast facilities where line-of-sight barcodes are impossible to use.

## Data Capture Evolution

- **Traveler Cards (Paper):** The traditional method. High risk of human error, lost paperwork, and delayed data entry (lag time).
- **Barcodes:** Requires manual intervention at every station. If a part is dirty, greasy, or rotated away from the scanner, the line stops.
- **RFID (Auto-ID):** The only solution for harsh environments. Heat-resistant and metal-mount tags read automatically through grease, dirt, and paint, enabling “hands-free” traceability.



# Strategic Business Case

## Financial Impact (Lean Manufacturing Metrics)

Implementing RFID in manufacturing is not just about tracking; it is about optimizing the “Flow” of the factory.

- **WIP Reduction (-20%):** Real-time visibility identifies bottlenecks instantly. Reducing WIP inventory frees up cash and reduces cycle times.
- **Asset Utilization (+15%):** Stop buying redundant tools. RFID Tool Tracking ensures you know exactly where every jig, mold, and calibration device is, reducing search time to zero.
- **Error Prevention:** Automated verification at every station ensures that the wrong part is never installed on the wrong assembly, preventing costly rework and recalls.

## Strategic Value (Factory of the Future)

True Industry 4.0 requires more than just automation; it requires intelligence. RFID transforms static assembly lines into responsive, data-driven ecosystems where products communicate with machines. This “physical-to-digital” bridge enables the agility needed to thrive in an era of mass customization and strict compliance.

- **Digital Twin Creation:** RFID provides the physical data feed that powers your Digital Twin, allowing for accurate simulation and predictive maintenance.
- **Dynamic Routing:** Assembly lines can become flexible. The product “tells” the machine what operations to perform (e.g., “I am a Sport Model, drill 3 holes”), enabling mass customization.

## Security & Reliability (Mission Critical)

- **Edge Redundancy:** Readers have onboard storage to buffer data if the network goes down, ensuring no production data is ever lost.
- **Interference Mitigation:** Advanced filtering algorithms distinguish between the tag passing on Conveyor A vs. the tag sitting on Conveyor B.
- **Data Sovereignty:** On-premise middleware options available for manufacturers who require that production data never leaves the factory firewall.



“ Our automated dock portals validate 100% of inbound and outbound shipments in motion

# Supply Chain Visibility with RFID

## Eliminating the “Black Hole”

In the modern supply chain, the greatest risks occur during the “hand-offs.” When goods move from factory to warehouse, or warehouse to truck, manual verification often fails. This results in the “Supply Chain Black Hole” — where inventory status is unknown until it arrives at the final destination.

Logistics RFID eliminates this blindness by automating the proof of transfer. By digitizing pallets, cases, and returnable assets, organizations achieve 100% shipping and receiving accuracy. This technology validates Advanced Shipping Notices (ASNs) in real-time as goods pass through dock doors, eliminating disputes, chargebacks, and administrative errors instantly.

## Key Applications

- **3PL & Distribution:** High-volume warehouses processing thousands of cartons per hour requiring automated verification.
- **Cold Chain:** Tracking temperature-sensitive pharmaceuticals or food where “Time out of Refrigeration” must be strictly monitored alongside location.
- **Returnable Assets (RTI):** Companies managing pools of plastic pallets, totes, or kegs that often get lost or hoarded by downstream partners.

## Data Capture Evolution

- **Manual Scanning:** Slow and creates bottlenecks at dock doors. Requires forklifts to stop for the operator to scan each pallet label individually.
- **GPS Trackers:** Excellent for tracking the truck, but cannot tell you what is inside the truck or if a specific pallet was left behind.
- **RFID Portals:** The only technology that validates the contents of the shipment in motion. It scans 100+ items on a pallet instantly as the forklift drives through the dock door.

# Strategic Business Case

## Financial Impact (The Logistics Dividend)

In logistics, speed and accuracy are the currency. RFID drives ROI by removing the friction of manual checks and eliminating the massive costs associated with shipping errors and lost assets.

- **Chargeback Elimination (-90%):** Retailers penalize suppliers for shipping errors (over/under/wrong items). RFID verifies every outbound shipment against the order manifest before the truck door closes.
- **Dock Throughput (+40%):** Eliminate the need to “Scan, Count, and Verify” manually. Forklifts drive through RFID portals at full speed, drastically reducing turnaround time for trucks.
- **Asset Recovery (+20%):** Stop buying new pallets and totes annually. Tracking Returnable Transport Items (RTIs) creates accountability, ensuring empty assets are returned by customers.

## Strategic Value (The Chain of Custody)

Visibility is not just about counting; it is about trust. RFID creates an immutable digital record of custody transfer, protecting all parties in the supply network from disputes and fraud.

- **Perfect Order Fulfillment:** Move from “Trust but Verify” to “Verify then Trust.” Ensure that the physical shipment matches the digital ASN (Advanced Shipping Notice) 100% of the time.
- **Cross-Docking Velocity:** Instantly identify inbound goods that need to be routed immediately to an outbound truck, bypassing storage completely and reducing handling costs
- **Dispute Resolution:** When a customer claims “short shipment,” you have digital proof (timestamp + video overlay) that the items were on the truck when it left your facility.

## Implementation Roadmap (3 Steps to Visibility)

- **Phase 1: Outbound Verification:** Install portals at 3-5 shipping docks to validate outgoing orders and stop shipping errors immediately.
- **Phase 2: RTI Tracking:** Tag your fleet of reusable pallets/totes to stop asset leakage and reduce annual procurement costs.
- **Phase 3: Inbound Automation:** Extend RFID to receiving docks to automate the “Goods Receipt” process and update WMS inventory in real-time.



“ We close the loop on Returnable Transport Items (RTIs), drastically reducing shrinkage and procurement costs

# RTI & Asset Management with RFID

## Stopping the Leakage

Industries rely on millions of Returnable Transport Items (RTIs)—plastic pallets, totes, kegs, and racks—to move products. However, these assets are frequently treated as “disposable” due to poor tracking. Companies lose 10% to 20% of their RTI pool annually, leading to massive replacement costs and production stoppages when containers are unavailable.

RFID Asset Management creates a closed-loop tracking system. By permanently tagging every reusable container, organizations gain total visibility into their asset pool. They can track exactly where assets are (at the factory, with a 3PL, or hoarding at a customer site), enforce accountability, and optimize cycle times to do more with fewer assets.

## Key Applications

- **Food & Beverage:** Tracking kegs, crates, and specialized racks that are expensive to replace and critical for distribution.
- **Automotive:** Managing specialized steel racks and custom dunnage used to transport engines and body panels between suppliers and assembly plants.
- **Retail Pooling:** Tracking plastic totes and roll cages used for store replenishment to prevent theft and unauthorized use.

## Visibility vs. Reality

- **Spreadsheets/Manual Count:** Pure guesswork. Relies on drivers or warehouse staff to manually count empty containers, which rarely happens accurately.
- **GPS Trackers:** Too expensive (\$50+) and battery-dependent for millions of low-cost assets like plastic crates.
- **Passive RFID:** The ideal solution. Low-cost (<\$1) durable tags that last for the lifetime of the asset (10+ years), requiring zero maintenance or batteries while providing checkpoint-level visibility.

# Strategic Business Case

## Financial Impact (The Asset Dividend)

The ROI for RTI tracking is often the fastest in the supply chain because it stops direct cash leakage immediately.

- **Shrinkage Reduction (-90%):** When assets are tracked to a specific location or customer, loss rates drop near zero. You stop buying replacement pallets for “ghost” losses.
- **Procurement Savings (-20%):** Improved cycle times (getting assets back faster) means you need a smaller total pool to support the same volume of business.
- **Deposit/Detention Accuracy:** Automate the billing of asset deposits. If a customer keeps a container too long (detention), the system automatically generates an invoice, incentivizing quick returns.

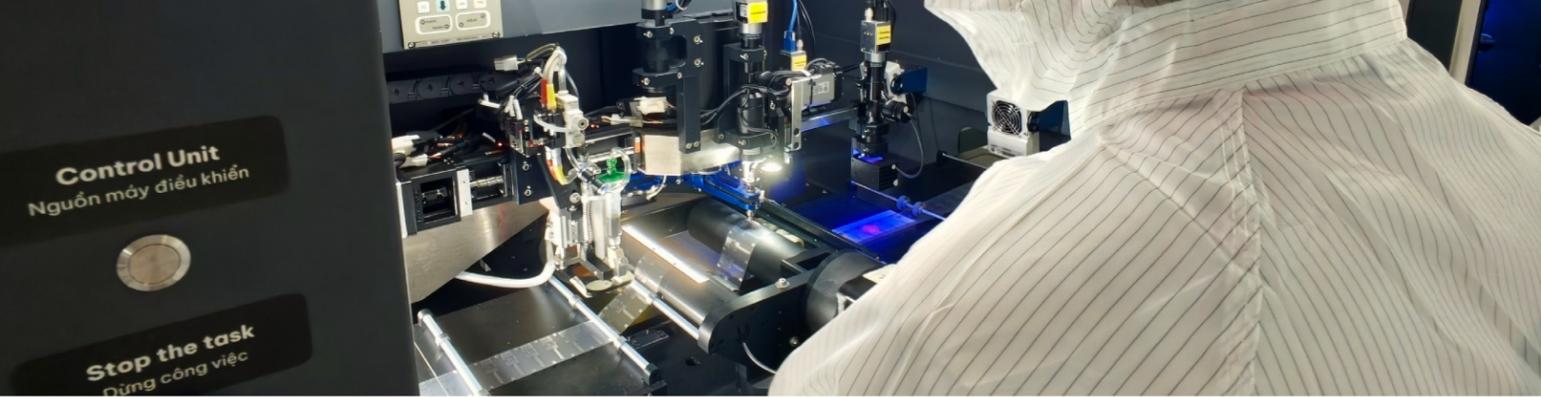
## Strategic Value (Lifecycle Intelligence)

Managing the asset is about more than just location; it is about managing its quality and lifecycle to ensure supply chain continuity.

- **Maintenance Scheduling:** Track the number of “turns” (trips) an asset makes. Automatically flag a pallet for cleaning or repair after every 20 cycles to ensure hygiene compliance (critical in Food/Pharma).
- **Pool Balancing:** Predictive analytics identify imbalances (e.g., “Warehouse A has too many empties, Factory B is running out”) and suggest transfers to prevent shortages.
- **Brand Protection:** Ensure that your branded kegs or crates are not being used by competitors or sold to recyclers illegally.

## Implementation Roadmap (3 Steps to Visibility)

- **Phase 1:** Checkpoint Installation: Install RFID portals at the key “hand-off” points.
- **Phase 2:** Tagging the Fleet: Apply durable, industrial RFID tags to your existing pool of assets.
- **Phase 3:** Partner Integration: Extend visibility by installing readers at key customer or supplier sites, or by using handheld apps for drivers to verify drops and pickups.



# Manufacturing Capacity

## Vertically Integrated Precision

Nextwaves stands apart as a fully vertically integrated manufacturer, eliminating the reliance on third-party component sourcing. We engineer every layer of the RFID stack in-house: from raw aluminum antenna etching and high-speed flip-chip bonding to final label converting and IoT hardware assembly.

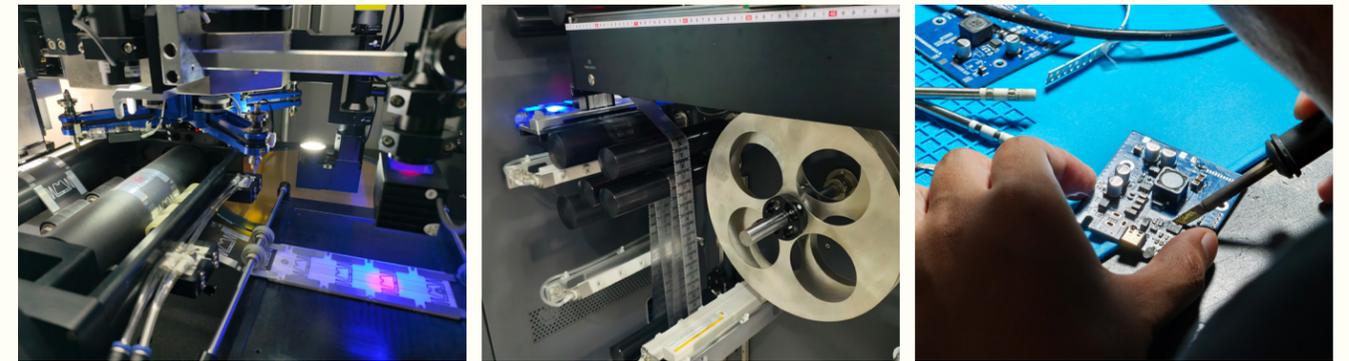
This end-to-end control allows us to guarantee rigorous quality standards and RF performance. Our facility is equipped to handle massive scale, producing millions of dry/wet inlays monthly while maintaining the agility to prototype custom hardware solutions—like ruggedized readers and gateways—in weeks rather than months.



## Visibility vs. Reality

- **Antenna & Inlay Bonding:** We operate advanced precision etching lines and high-speed bonding machines (40,000 UPH) compatible with all major ICs (Impinj, NXP), ensuring optimal sensitivity for any surface.
- **Label Converting & Encoding:** Our converting lines transform raw inlays into durable, ready-to-use smart labels. We handle complex lamination for heat/moisture resistance and perform inline serialization to ensure 100% data accuracy.
- **Hardware & Reader Assembly:** Beyond tags, we manufacture the infrastructure. Our dedicated SMT and mechanical assembly lines produce high-performance fixed readers, handhelds, and overhead gateways tested for industrial durability.

# The Core Technology



## Inlay & Bonding

Our manufacturing core is built on precision. We utilize advanced flip-chip bonding technology capable of processing 40,000 units per hour (UPH) with a yield rate exceeding 99.7%.

IC Compatibility: Universal bonding support for Quanray Qstar 7U, NXP UCODE 9

## Label Converting

We transform raw inlays into market-ready smart labels certified for global retail and industrial use.

Designs optimized to meet many specifications for retail compliance.

## Hardware Engineering

Beyond consumables, we manufacture the infrastructure that powers the ecosystem.

In-house manufacturing high-performance fixed readers, handheld sleds, and overhead gateways.

## Zero-Defect Quality Assurance

- **Stage 1: AOI (Automated Optical Inspection):** High-resolution cameras inspect 100% of antenna structures and chip placements during bonding to detect micron-level misalignments.
- **Stage 2: RF Performance Validation:** Every single inlay is energized and tested for signal strength (RSSI) and frequency response before converting. Failed units are automatically marked and culled.
- **Stage 3: Final System Audit:** Finished hardware and labels undergo a final “Golden Sample” comparison to ensure strict adherence to client specifications and ISO 9001 standards.

# Hyperion Product Line

## Nextwaves Hyperion Self check-out Kiosk

Enhance automated checkout capabilities within the system at deployed locations such as clothing stores and convenience stores, v.v.

### Electrical Specification

Operating Frequency (MHz)	902 - 928 (customizable)
Power Supply (V)	220
RF Output Power (dBm)	Max 30 dBm, configurable (@1dBm per step)
Reading Distance (cm)	Up to 50cm (depends on tag as well)
RFID tag read speed (sec)	≤ 1.5
Operating System	Windows/Linux
Main controller	Mini PC
Touchscreen display	Touchscreen 24 inch

### Mechanical Specification

Cover Material	Wood
Size, H (mm)	1532
Size, W (mm)	468
Size, L (mm)	487
Weight, M (kg)	35
Operating and Storage temperature	-30 C ~ +60C



## Nextwaves Hyperion Handheld Scanner

Engineered for extreme performance and effortless usability, the Hyperion transforms complex data capture into a seamless, single-motion task.

### Electrical Specification

Operating Frequency (MHz)	866 - 928 (customizable)
Battery	5000 mAh, 3.7V
RF Output Power (dBm)	Max 30 dBm, configurable (@1dBm per step)
RFID tag read speed (sec)	≤ 1.5
Communication Protocol	Bluetooth 5.3

### Mechanical Specification

Cover Material	ABS, Aluminium
Size, H (mm)	270
Size, W (mm)	200
Size, L (mm)	50
Weight, M (kg)	0.9
Operating and Storage temperature	-30 C ~ +60C



## Nextwaves Hyperion Small Scanner

Engineered for extreme performance and effortless usability for door, desktop.

### Electrical Specification

Operating Frequency (MHz)	866 - 928 (customizable)
Input Power	5V (max 2A)
RF Output Power (dBm)	Max 30 dBm, configurable (@1dBm per step)
Connector	USB Type-C

### Mechanical Specification

Cover Material	ABS, Aluminium
Size, H (mm)	130
Size, W (mm)	130
Size, L (mm)	24
Weight, M (kg)	0.4
Operating and Storage temperature	-30 C ~ +60C



# Rugged RFID Antenna

## RFID Rugged Antenna CP1414

### Specification

Operating Frequency (MHz)	(Option 1) 865 - 868 (Option 2) 902 - 928
Max Gain (dBic)	5
Polarization	Circular
Axial Ratio (typ.) (dB)	2
VSWR	≤ 1.7
Impedance, (Ohm)	50
3-dB Beamwidth (XZ plane)	106 deg
3-dB Beamwidth (YZ plane)	106 deg
Connector	N-Type Female
Cover	Aluminum, Acrylic
Size (mm)	27x 143.4 x 143.4
Environmental Rating	IP67



## RFID Rugged Antenna CP2424

### Specification

Operating Frequency (MHz)	902 - 928
Max Gain (dBic)	9
Polarization	Circular
Axial Ratio (typ.) (dB)	2
VSWR	≤ 1.5
Impedance, (Ohm)	50
Connector	N-Type Female
Cover	Aluminum, Acrylic
Size (mm)	20 x 240 x 240
Environmental Rating	IP67



# IoT RFID

## Nextwaves NR-155 Fixed IoT Reader

The NR155 is a high-performance Fixed IoT UHF RFID Reader engineered for smart retail, desktop workstations, and industrial automation. Powered by a High-Performance UHF RFID Engine, it delivers exceptional sensitivity and multi-tag reading stability in a compact footprint.

### Hardware & system

Processor	Industrial Dual-Core 32-bit RISC MCU
Operating System	Real-Time Operating System (RTOS)
Network Protocol	MQTT / MQTTS
API / Integration	Standard MQTT Topics (JSON Payload)
Firmware Upgrade	Support OTA (Over-The-Air)
Connector	USB Type B, RS232, GPIO (4 pin), Ethernet
Host Configuration Protocol	DHCP, Static
Interface	UART Interface Command Set / Nextwaves Hypercloud



### RF

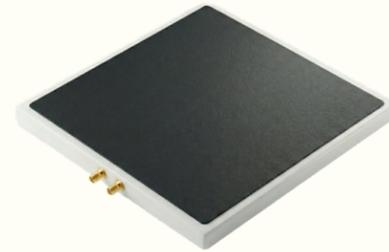
Antenna Ports	4 x RP-TNC Ports
Output Power	0 dBm to 30 dBm
Max. Sensitivity	-85 dBm
Dimensions	155x155x32mm
Weight	650 gram
Operating and Storage temperature	-30 C - +60C / -220 to 1490oF

# Nextwaves Dual Near-field

## Nextwaves Dual Near-field Antenna

Enhance automated checkout capabilities within the system at deployed locations such as clothing stores and convenience stores, v.v.

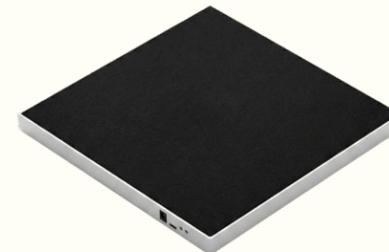
RF Specification	
Operating Frequency (MHz)	866 - 928 (customizable)
SKU	RA-U-SFN2-252501
Connector	Dual SMA



## Nextwaves Dual Near-field Reader with Antenna Integrated

Enhance automated checkout capabilities within the system at deployed locations such as clothing stores and convenience stores, v.v.

RF Specification	
Operating Frequency (MHz)	866 - 928 (customizable)
SKU	RD-U-CFN2-302501
Device Connectivity	USB Type-C
Power Connectivity	Jack DC 5.5mm x 2.1mm
RF Output Power	Consumption: 3.5W max. Max 30 dBm, configurable (@1 dBm per step)
Antenna Type	Dual Near-field
Reading Distance	Up to 50cm



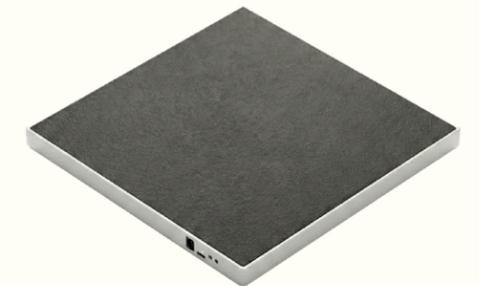
Mechanical Specification	
Cover Material	ABS, Aluminium
Size (W x L x H)	300x250x190 (mm)v

# Nextwaves Near-field

## Nextwaves Near-field Reader with Antenna Integrated

RF Specification	
Operating Frequency (MHz)	866 - 928 (customizable)
SKU	RD-W-SFN-303001
Device Connectivity	USB Type-C
Power Connectivity	Jack DC 5.5mm x 2.1mm
RF Output Power	Consumption: 3.5W max. Max 30 dBm, configurable (@1 dBm per step)
Antenna Type	Near-field
Reading Distance	Up to 50cm

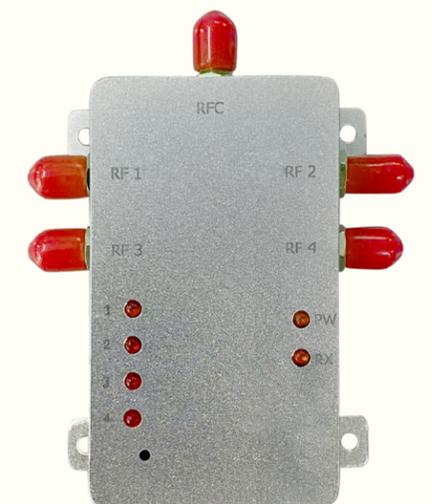
Mechanical Specification	
Cover Material	ABS, Aluminium
Size (W x L x H)	313x313x30 (mm)



# RF Switch

## SPFT RF SWITCH

SW-RF-10-A1	
Frequency Range	50 – 3000 MHz
Insertion Loss	0.5 dB
Isolation	≤ -25 dB
Transit Time	30 ms (typ.)
0.1 dB Compression	+39 dBm
Maximum Power	+40 dBm
Supply Voltage	+5V (Type C) / +9V (DC Jack)
Operating Temp	-55°C to 100°C
Dimensions	57.7 x 75.6 x 15.5 mm
Housing Material	Aluminum



# Nextwaves Slim RFID

## RFID Slim CP12025



SKU	Frequency range (GHz)	VSWR	Axial Ratio (dB)	Gain (dBic)	Power max (W)	Pol.	Dimensions [WxLxH](mm)	Connector	Cover
RA-UC-SFF-1202501	0.9-0.93 (US Band)	≤ 1.2	1.5	14.8	10	Circular	1218x258x12.5	SMA Female	ABS

## RFID Slim LP12040



SKU	Frequency range (GHz)	VSWR	Gain, Typ (dBic)	Power max (W)	Pol.	Dimensions [WxLxH](mm)	Connector	Cover
RA-UL-SFF-1204001	0.9-0.93 (US Band)	≤ 2	17	10	Linear	1218x428x12.5	SMA Female	ABS

## RFID Slim CP12048



SKU	Frequency range (GHz)	VSWR	Axial Ratio (Typ) (dB)	Gain (dBic)	Power max (W)	Pol.	Dimensions [WxLxH](mm)	Connector	Cover
RA-UC-SFF-1204801	0.9-0.93 (US Band)	≤ 1.5	1.5	17	10	Circular	1218x488x12.5	SMA Female	ABS

## RFID Slim CP6025



SKU	Frequency range (GHz)	VSWR	Axial Ratio (dB)	Gain (dBic)	Power max (W)	Pol.	Dimensions [WxLxH](mm)	Connector	Cover
RA-UC-SFF-602501	0.9-0.93	≤ 1.4	1.5	12	10	Circular	600x250x11.5	SMA Female	ABS

## RFID Slim CP6226



SKU	Frequency range (GHz)	VSWR	Axial Ratio (Typ.) (dB)	Gain, Typ (dBic)	Power max (W)	Pol.	Dimensions [WxLxH](mm)	Connector	Cover
RA-UC-SFF-622601*	0.9-0.93	≤ 1.4	1.5	12	10	RHCP	620x260x13	SMA Female	ABS
RA-UC-SFF-622602	0.9-0.93	≤ 1.4	1.5	12	10	RHCP	620x260x11	SMA Female	ABS

(\*) Low sidelobe level (< -15 dB)

## RFID Slim CP2525



SKU	Frequency range (GHz)	VSWR	Axial Ratio (dB)	Gain, Typ (dBic)	Power max (W)	Pol.	Dimensions [WxLxH](mm)	Connector	Cover
RA-UC-SFF-252501	0.9-0.93	≤ 1.15	1.5	9	10	RHCP	258x258x14.5	SMA Female	ABS
RA-UC-SFF-252502	0.9-0.93	≤ 1.25	2	9	10	RHCP	258x258x14.5	SMA Female	ABS



# The Art of Precision Bonding

## The Engineering Challenge

RFID inlay manufacturing is not merely a production process. It is a battle against microscopic tolerances. The core difficulty lies in the “flip-chip” bonding stage where a silicon microchip, often no larger than a grain of sand, must be precisely aligned with the aluminum antenna pads. The margin for error is measured in microns. A misalignment the width of a human hair or a fluctuation in thermal compression of a singular degree can sever the connection and render the tag useless. Achieving this connectivity requires orchestrating high-speed robotics, precise adhesive jetting, and rapid thermal curing simultaneously.

At Nextwaves Industries, we have conquered these technical barriers. The images to the left showcase our sophisticated bonding nozzles and converting lines in action. We utilize advanced anisotropic conductive adhesives and high-precision dispensing systems that operate at blistering speeds without sacrificing accuracy. Our process ensures that the electrical bond between the chip and the antenna is robust enough to withstand environmental stressors. This ensures high read-range performance and long-term durability that generic assembly lines cannot match.

Establishing this level of high-tech manufacturing within Vietnam was a deliberate and challenging strategic choice. We moved beyond simple assembly to master the deep-tech fundamentals of the supply chain. Our facility is designed to meet rigorous international standards and features controlled clean-room environments to eliminate dust contamination along with automated optical inspection systems that scrutinize every millimeter of the antenna roll.

By localizing this complex manufacturing capability, Nextwaves Industries is doing the hard work of building the digital foundation for Vietnam. We are not just importing technology. We are internalizing it. From the raw etching of antennas to the final converting of labels, every step is executed by Vietnamese engineers in a Vietnamese facility. This proves that we have the skill, the discipline, and the infrastructure to lead the global RFID industry.

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Leading RFID innovation for a self-reliant digital Vietnam.

# UHF RFID Inlay

## Quanray Qstar 7U chip

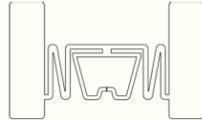


UHF RFID Inlay 42 x 16 mm



Estimated Read Distance\*: 3.0 – 5.0 meters. Mid-Size Retail: A compact general-purpose inlay often used for apparel hang tags and box labeling where space is moderate..

UHF RFID Inlay 50 x 30 mm



Estimated Read Distance\*: 6.0 – 9.0 meters. High-Performance Logistics: The larger antenna surface area allows for better RF energy capture. Ideal for shipping labels, asset tracking, and warehouse logistics..

UHF RFID Inlay 75 x 15 mm



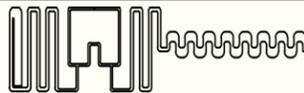
Estimated Read Distance\*: 8.0 – 12.0+ meters. Slim / Belt Inlay: Long and narrow dipole design (often called "Belt" style). Excellent for supply chain management, windshield tags, and carton tracking due to high sensitivity..

UHF RFID Inlay 95 x 8 mm



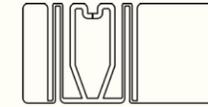
Estimated Read Distance\*: 4.0 – 7.0 meters. Needle / Spine Tag: Extremely thin profile designed for narrow surfaces. Commonly used on book spines, file folders, and stacked documents..

UHF RFID Inlay Jewelry Tag 49 x 11 mm



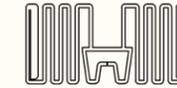
Estimated Read Distance\*: 1.0 – 2.5 meters. Jewelry / Tail Tag: Designed with a "tail" to wrap around small objects like rings, sunglasses, or watches. Tuned to minimize detuning near small metallic objects..

UHF RFID Inlay Foldable 40x20 mm



Estimated Read Distance\*: 2.5 – 5.0 meters. On-Metal / Flag Tag: Designed to protrude from the surface. The "fold" creates a standoff distance, allowing it to work on difficult surfaces like metal pipes or liquid containers..

UHF RFID Inlay 35 x 17 mm

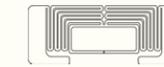


Estimated Read Distance\*: 1.5 – 3.5 meters. Compact Item Level: A small footprint inlay for tagging smaller retail items, cosmetics, or pharmaceuticals where surface area is limited..

## NXP UCODE 9



UHF RFID Inlay 42 x 16 mm



Estimated Read Distance\*: 3.0 – 5.0 meters. Mid-Size Retail: A compact general-purpose inlay often used for apparel hang tags and box labeling where space is moderate..

UHF RFID Inlay 50 x 30 mm



Estimated Read Distance\*: 6.0 – 9.0 meters. High-Performance Logistics: The larger antenna surface area allows for better RF energy capture. Ideal for shipping labels, asset tracking, and warehouse logistics..

UHF RFID Inlay 75 x 15 mm



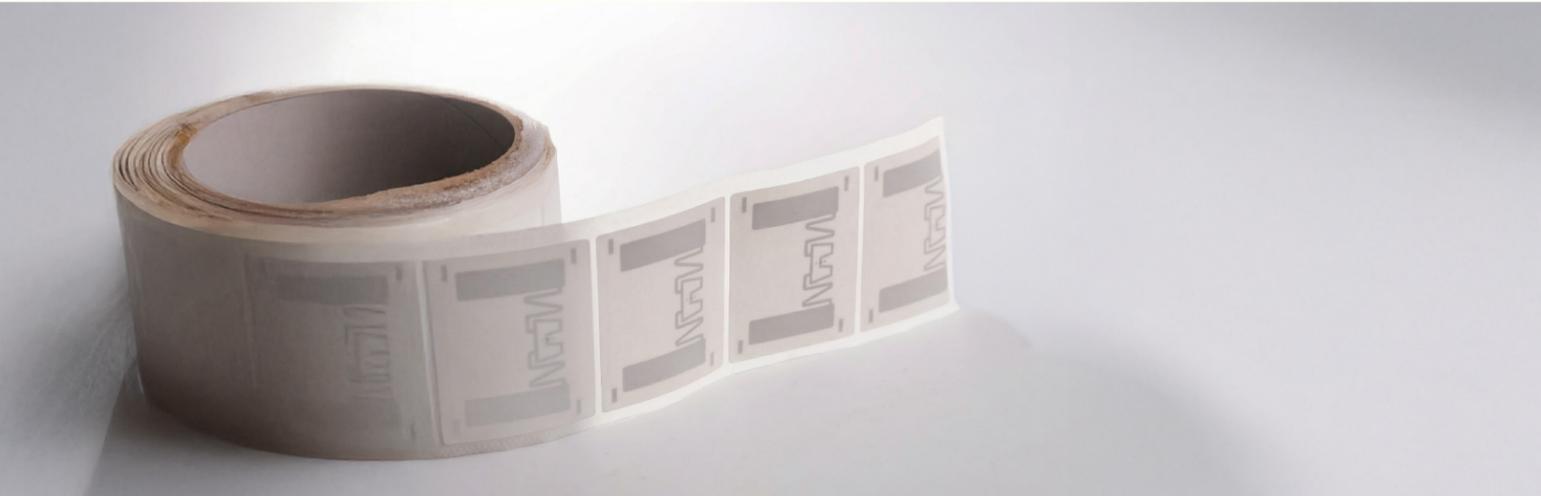
Estimated Read Distance\*: 8.0 – 12.0+ meters. Slim / Belt Inlay: Long and narrow dipole design (often called "Belt" style). Excellent for supply chain management, windshield tags, and carton tracking due to high sensitivity..

UHF RFID Inlay 95 x 8 mm



Estimated Read Distance\*: 4.0 – 7.0 meters. Needle / Spine Tag: Extremely thin profile designed for narrow surfaces. Commonly used on book spines, file folders, and stacked documents..

# UHF RFID Label



High-performance UHF RFID convertibles designed for versatility across retail, logistics, and asset tracking applications. Available in both adhesive label (sticker) and non-adhesive hangtag formats, these tags ensure accurate inventory visibility and seamless supply chain management. Compatible with standard RFID printers for custom encoding and printing.

## Key Specifications:

- Type: UHF Passive RFID (EPC Class 1 Gen 2 / ISO 18000-6C)
- Format: Roll form
- Frequency: Global 860-960 MHz

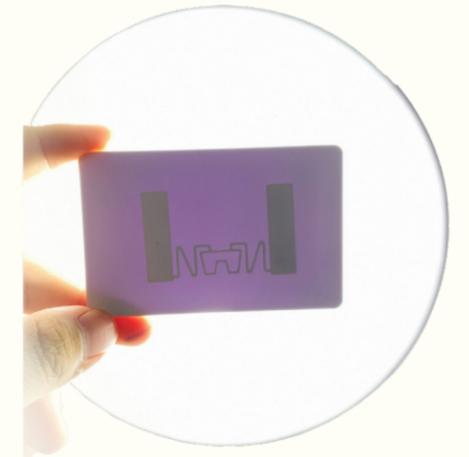
Standard Size		
Adhesive Sticker	44x19, 44.5x19, 50x25	Small item tagging, Jewelry, Pharma
	54x34, 57x38	Standard retail packaging, Cosmetics
	76x20, 76x22	Edge tagging, Document tracking
	87x41	Box labeling, Asset management
Hangtag (Apparel)	125x22	Windshield tags, Pallet tagging
	75x50, 87x41	Garments, Accessories, Footwear

# UHF RFID Card

High-Performance Hybrid UHF RFID Cards designed for superior long-range identification and automated personnel tracking. Dominating the dual-frequency landscape, these PVC cards prioritize Gen 2 UHF technology to deliver exceptional read ranges and bulk-scanning capabilities, making them ideal for hands-free access control and event attendance monitoring. Seamlessly co-integrated with NFC (HF) technology, they also support close-range interaction with smartphones and secure payment terminals.

## Key Specifications:

- Primary Technology: UHF Passive RFID (EPC Class 1 Gen 2 / ISO 18000-6C)
- Secondary Technology: NFC (HF 13.56 MHz / ISO 14443A)
- Read Range (UHF): Long-range (up to 8-10m depending on reader)
- Format: ISO CR80 PVC Card



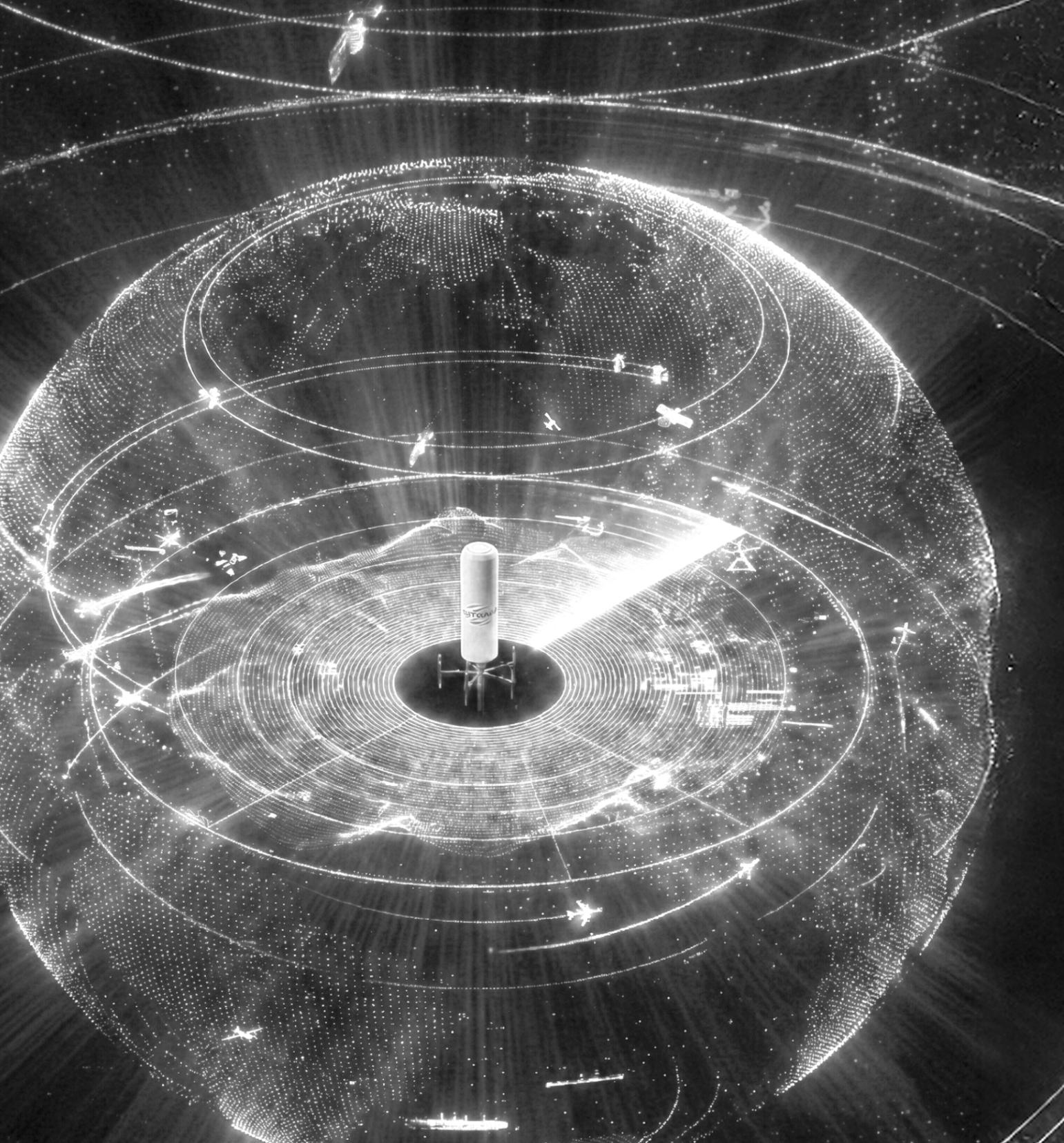
# UHF RFID Hangtag

Combine premium brand presentation with advanced inventory visibility. Our RFID hangtags are designed to integrate seamlessly into your supply chain, offering high-performance UHF technology disguised within high-quality packaging materials. From standard sizes to fully bespoke shapes, we provide end-to-end customization to match your brand identity.

## Surface Materials:

- 200gsm Art Paper / Coated Paper
- 250gsm Art Paper / Coated Paper
- 200gsm White Card Paper
- Custom materials available upon request.





## Advanced Antenna System

## Rectangular Waveguide Interface Aperture



SKU	Waveguide (EIA)	Frequency range (GHz)	VSWR (∓1)	Gain (dBic)	Dimensions [WxLxH](mm)	Flange
SH-975-NF-10-CPRG	WR975	0.75 - 1.15	<1.25	10	450x320x435	CPRG
SH-770-NF-10-CPRG	WR770	0.97 - 1.45	<1.25	10	382x280x354	CPRG
SH-650-NF-10-CPRG	WR650	1.15 - 1.72	<1.25	10	310x230x290	CPRG
SH-510-NF-10-CPRG	WR510	1.45 - 2.20	<1.25	10	245x190x410	CPRG
SH-430-NF-10-CPRG	WR430	1.72 - 2.60	<1.25	10	205x155x380	CPRG
SH-430-NF-15-CPRG				15	370x270x370	CPRG
SH-340-NF-10-CPRG	WR340	2.20 - 3.30	<1.25	10	160x120x263	CPRG
SH-340-NF-15-CPRG				15	318x249x298	CPRG
SH-284-NF-10-CPRG	WR284	2.60 - 3.95	<1.25	10	140x105x220	CPRG
SH-284-NF-15-CPRG				15	232x170x270	CPRG
SH-229-NF-10-CPRG	WR229	3.30 - 4.90	<1.25	10	120x85x147	CPRG
SH-229-NF-15-CPRG				15	215x152x247	CPRG
SH-187-NF-10-CPRG	WR187	3.95 - 5.85	<1.25	10	100x80x192	CPRG
SH-187-NF-15-CPRG				15	165x120x200	CPRG
SH-159-NF-10-CPRG	WR159	4.90 - 7.05	<1.25	10	81x72x122	CPRG
SH-159-NF-15-CPRG				15	136x101x178	CPRG
SH-137-NF-10-CPRG	WR137	5.85 - 8.20	<1.25	10	67x55x108	CPRG
SH-137-NF-15-CPRG				15	143x112x166	CPRG
SH-137-NF-20-CPRG				20	195x152x285	CPRG
SH-112-NF-10-SQ	WR112	7.05 - 10.00	<1.25	10	52x46x87	SQ
SH-112-NF-15-SQ				15	101x70x136	SQ
SH-112-NF-20-SQ				20	170x126x227	SQ
SH-90-SF-10-SQ	WR90	8.20 - 12.40	<1.25	10	41x42x74	SQ
SH-90-SF-15-SQ				15	83x59x105	SQ
SH-90-SF-20-SQ				20	144x112x202	SQ
SH-75-SF-10-SQ	WR75	10.00 - 15.00	<1.25	10	37x38x60	SQ
SH-75-SF-25-SQ				15	67x48x87	SQ
SH-75-SF-20-SQ				20	107x83x152	SQ
SH-62-SF-10-SQ	WR62	12.40 - 18.00	<1.25	10	33x35x58	SQ
SH-62-SF-15-SQ				15	48x35x82	SQ
SH-62-SF-20-SQ				20	93x71x133	SQ
SH-51-SF-10-SQ	WR51	15.00-22.00	<1.25	10	30x31x44	SQ
SH-51-SF-15-SQ					43x33x66	SQ
SH-51-SF-20-SQ					76x58x107	SQ

# Coaxial to Rectangular Waveguide Adapter

Model | Specification



SKU	Waveguide (EIA)	Frequency range (GHz)	VSWR (:1)	Gain (dBic)	Dimensions [WxLxH](mm)	Flange
SA-975-NF-CPRG	WR975	0.75 - 1.15	<1.25	10	450x320x435	CPRG
SA-770-NF-CPRG	WR770	0.97 - 1.45	<1.25	10	382x280x354	CPRG
SA-650-NF-CPRG	WR650	1.15 - 1.72	<1.25	10	310x230x290	CPRG
SA-510-NF-CPRG	WR510	1.45 - 2.20	<1.25	10	245x190x410	CPRG
SA-430-NF-CPRG	WR430	1.72 - 2.60	<1.25	10	205x155x380	CPRG
SA-430-SF-CPRG				15	370x270x370	CPRG
SA-340-NF-CPRG	WR340	2.20 - 3.30	<1.25	10	160x120x263	CPRG
SA-340-SF-CPRG				15	318x249x298	CPRG
SA-284-NF-CPRG	WR284	2.60 - 3.95	<1.25	10	140x105x220	CPRG
SA-284-SF-CPRG				15	232x170x270	CPRG
SA-229-NF-CPRG	WR229	3.30 - 4.90	<1.25	10	120x85x147	CPRG
SA-229-SF-CPRG				15	215x152x247	CPRG
SA-187-NF-CPRG	WR187	3.95 - 5.85	<1.25	10	100x80x192	CPRG
SA-187-SF-CPRG				15	165x120x200	CPRG
SA-159-NF-CPRG	WR159	4.90 - 7.05	<1.25	10	81x72x122	CPRG
SA-159-SF-CPRG				15	136x101x178	CPRG
SA-137-NF-CPRG	WR137	5.85 - 8.20	<1.25	10	67x55x108	CPRG
SA-137-SF-CPRG				15	143x112x166	CPRG
SA-112-NF-SQ				20	195x152x285	CPRG
SA-112-SF-SQ	WR112	7.05 - 10.00	<1.25	10	52x46x87	SQ
SA-90-SF-SQ				15	101x70x136	SQ
SA-75-SF-SQ				20	170x126x227	SQ
SA-62-SF-SQ	WR90	8.20 - 12.40	<1.25	10	41x42x74	SQ
SA-51-SF-SQ				15	83x59x105	SQ

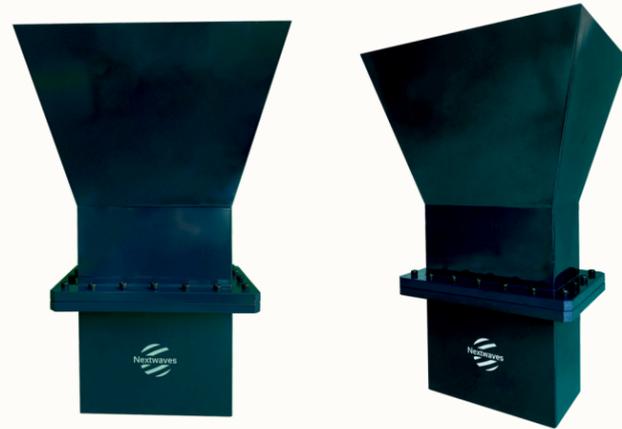
# Waveguide Horn Antenna

Model | Specification



SKU	Waveguide (EIA)	Frequency range (GHz)	VSWR (:1)	Gain (dBic)	Dimensions [WxLxH] (mm)	Flange	Connector
SH-975-NF-10-CPRG	WR975	0.75 - 1.15	<1.25	10	450x320x665	CPRG	N Type Female
SH-770-NF-10-CPRG	WR770	0.97 - 1.45		10	382x280x520		N Type Female
SH-650-NF-10-CPRG	WR650	1.15 - 1.72		10	310x230x430		N Type Female
SH-510-NF-10-CPRG	WR510	1.45 - 2.20	<1.25	10	245x190x520		N Type Female
SH-430-NF-10-CPRG	WR430	1.72 - 2.60	<1.25	10	205x155x480	CPRG	N Type Female
SH-430-SF-10-CPRG	WR430	1.72 - 2.60	<1.25	10	205x155x480		SMA Female
SH-430-NF-15-CPRG	WR430	1.72 - 2.60	<1.25	15	370x270x470		N Type Female
SH-430-SF-15-CPRG	WR430	1.72 - 2.60	<1.25	15	370x270x470		SMA Female
SH-340-NF-10-CPRG	WR340	2.20 - 3.30	<1.25	10	160x120x355	CPRG	N Type Female
SH-340-SF-10-CPRG	WR340	2.20 - 3.30	<1.25	10	160x120x355		SMA Female
SH-340-NF-15-CPRG	WR340	2.20 - 3.30	<1.25	15	318x249x390		N Type Female
SH-340-SF-15-CPRG	WR340	2.20 - 3.30	<1.25	15	318x249x390		SMA Female
SH-284-NF-10-CPRG	WR284	2.60 - 3.95	<1.25	10	140x105x300	CPRG	N Type Female
SH-284-SF-10-CPRG	WR284	2.60 - 3.95	<1.25	10	140x105x300		SMA Female
SH-284-NF-15-CPRG	WR284	2.60 - 3.95	<1.25	15	232x170x350		N Type Female
SH-284-SF-15-CPRG	WR284	2.60 - 3.95	<1.25	15	232x170x350		SMA Female
SH-229-NF-10-CPRG	WR229	3.30 - 4.90	<1.25	10	120x85x225	CPRG	N Type Female
SH-229-SF-10-CPRG	WR229	3.30 - 4.90	<1.25	10	120x85x225		SMA Female
SH-229-NF-15-CPRG	WR229	3.30 - 4.90	<1.25	15	215x152x325		N Type Female
SH-229-SF-15-CPRG	WR229	3.30 - 4.90	<1.25	15	215x152x325		SMA Female
SH-187-NF-10-CPRG	WR187	3.95 - 5.85	<1.25	10	100x80x245	CPRG	N Type Female
SH-187-NF-15-CPRG	WR187	3.95 - 5.85	<1.25	10	100x80x245		SMA Female
SH-187-SF-15-CPRG	WR187	3.95 - 5.85	<1.25	15	165x120x252		N Type Female
SH-159-NF-10-CPRG	WR187	3.95 - 5.85	<1.25	15	165x120x252		SMA Female
SH-159-SF-10-CPRG	WR159	4.90 - 7.05	<1.25	10	81x72x172	CPRG	N Type Female
SH-159-NF-15-CPRG	WR159	4.90 - 7.05	<1.25	10	81x72x172		SMA Female
SH-159-SF-15-CPRG	WR159	4.90 - 7.05	<1.25	15	136x101x228		N Type Female
SH-137-NF-10-CPRG	WR159	4.90 - 7.05	<1.25	15	136x101x228		SMA Female
SH-137-SF-10-CPRG	WR137	5.85 - 8.20	<1.25	10	67x55x158	CPRG	N Type Female
SH-137-NF-15-CPRG	WR137	5.85 - 8.20	<1.25	10	67x55x158		SMA Female
SH-137-SF-15-CPRG	WR137	5.85 - 8.20	<1.25	15	143x112x216		N Type Female
SH-137-NF-20-CPRG	WR137	5.85 - 8.20	<1.25	15	143x112x216		SMA Female
SH-137-SF-20-CPRG	WR137	5.85 - 8.20	<1.25	20	195x152x335		N Type Female
SH-112-NF-10-SQ	WR137	5.85 - 8.20	<1.25	20	195x152x335		SMA Female

## Waveguide Horn Antenna



Model | Specification

SKU	Waveguide (EIA)	Frequency range (GHz)	VSWR (1)	Gain (dBic)	Dimensions [WxLxH](mm)	Flange	Connector
SH-112-SF-10-SQ	WR112	7.05 - 10.00	<1.25	10	52x46x129		N Type Female
SH-112-NF-15-SQ	WR112	7.05 - 10.00	<1.25	10	52x46x129		SMA Female
SH-112-SF-15-SQ	WR112	7.05 - 10.00	<1.25	15	101x70x178		N Type Female
SH-112-NF-20-SQ	WR112	7.05 - 10.00	<1.25	15	101x70x178		SMA Female
SH-112-NF-20-SQ	WR112	7.05 - 10.00	<1.25	20	170x126x269		N Type Female
SH-112-SF-20-SQ	WR112	7.05 - 10.00	<1.25	20	170x126x269		SMA Female
SH-90-SF-10-SQ	WR90	8.20 - 12.40	<1.25	10	41x42x112	SQ	SMA Female
SH-90-SF-15-SQ	WR90	8.20 - 12.40	<1.25	15	83x59x143	SQ	SMA Female
SH-90-SF-20-SQ	WR90	8.20 - 12.40	<1.25	20	144x112x240	SQ	SMA Female
SH-75-SF-10-SQ	WR75	10.00 - 15.00	<1.25	10	37x38x92	SQ	SMA Female
SH-75-SF-15-SQ	WR75	10.00 - 15.00	<1.25	15	67x48x119	SQ	SMA Female
SH-75-SF-20-SQ	WR75	10.00 - 15.00	<1.25	20	107x83x184	SQ	SMA Female
SH-62-SF-10-SQ	WR62	12.40 - 18.00	<1.25	10	33x35x85	SQ	SMA Female
SH-62-SF-15-SQ	WR62	12.40 - 18.00	<1.25	15	48x35x85	SQ	SMA Female
SH-62-SF-20-SQ	WR62	12.40 - 18.00	<1.25	20	93x71x160	SQ	SMA Female
SH-51-SF-10-SQ	WR51	15.00 - 22.00	<1.25	10	30x31x72	SQ	SMA Female
SH-51-SF-15-SQ	WR51	15.00 - 22.00	<1.25	15	43x33x94	SQ	SMA Female
SH-51-SF-20-SQ	WR51	15.00 - 22.00	<1.25	20	76x58x135	SQ	SMA Female



## Omni-Marine Antenna BC-103

Model | Specification



SKU	Frequency range (GHz)	VSWR	Peak gain (dBi)	Pol.	Power max (W)	MIMO/SISO	Connector	Cover
MO-BC-101	0.617 - 0.96	<2.2	3.5	Linear	10	SISO	SMA Female	ABS
MO-BC-101	1.427 - 1.517	<2.2	3.5	Linear	10	SISO	SMA Female	ABS
MO-BC-101	1.71 - 2.7	<2.2	3.5	Linear	10	SISO	SMA Female	ABS
MO-BC-101	3.4 - 3.8	<2.2	3.5	Linear	10	SISO	SMA Female	ABS

## Omni-Marine Antenna BC-206

Model | Specification



SKU	Frequency range (GHz)	VSWR	Peak gain (dBi)	Pol.	MIMO/SISO	Height	Connector	Material
MO-BC-202	0.617 - 0.96	<2	6.5	Linear	MIMO	346	SMA Female	ABS
MO-BC-202	1.427 - 1.517	<2	6.5	Linear	MIMO	346	SMA Female	ABS
MO-BC-202	1.71 - 2.7	<2	6.5	Linear	MIMO	346	SMA Female	ABS
MO-BC-202	3.4 - 3.8	<2	6.5	Linear	MIMO	346	SMA Female	ABS

## Omni-Marine Bamboo Antenna PVC

Model | Specification



SKU	Frequency range (GHz)	VSWR	Peak gain (dBi)	Pol.	Height (mm)	MIMO/SISO	Connector	Cover
MO-BC-101	0.694 - 0.960	<2.1	2.0	Linear	950	MIMO	SMA Female	PVC
MO-BC-101	1.710 - 2.170	<3.2	4.0	Linear	950	MIMO	SMA Female	PVC
MO-BC-101	2.300 - 2.690	<2.4	2.5	Linear	950	MIMO	SMA Female	PVC
MO-BC-101	2.400 - 2.484	<2.3	3	Linear	950	MIMO	SMA Female	PVC

## Omni-Marine Bamboo Antenna ASA

Model | Specification



SKU	Frequency range (GHz)	VSWR	Peak gain (dBi)	Pol.	MIMO/SISO	Connector	Cover
MO-PA-201	0.694 - 0.960	<2.1	2.0	Linear	MIMO	SMA Female	ABS
MO-PA-201	1.710 - 2.170	<3.2	4.0	Linear	MIMO	SMA Female	ABS
MO-PA-201	2.300 - 2.690	<2.4	2.5	Linear	MIMO	SMA Female	ABS
MO-PA-201	2.400 - 2.484	<2.3	3	Linear	MIMO	SMA Female	ABS



## BTS 4G Antenna

Model | Specification

Mechanical Specifications	
Dimensions (WxLxD)	350 x 1380 x 150 (mm)
Net Weight	≤17 kg
Lightning Protection	DC ground
Connector	6 x 4.3-10 Connector Female (IP67), Bottom positioned
E-TILT Adjusting module	Replaceable Internal RET, 1 x Bottom positioned
Mechanical downtilt	0° - 20°
Mounting interface	Pole mounting (Ø45 - Ø120mm)
Wind load (at 150km/h)(N)	Front/Rear : 640 Lateral : 350
Survival wind speed	200 Km/h
Radome material	ASA+PC, UV resistance
Radome color	Gray (RAL 7047)

Lowband	
Frequency	1710 - 2690 MHz
Antenna gain	16.2 - 16.8 dBi
Polarization	Dual, ± 45 °
Electrical downtilt	0° - 10 °
Horizontal beamwidth	65° ± 5.0°
Vertical beamwidth	6.4° ± 1.0°
Highband	
Frequency	698 - 960 MHz
Antenna gain	13.2 - 13.8 dBi
Polarization	Dual, ± 45 °
Electrical downtilt	0° - 10 °
Horizontal beamwidth	67° ± 4.0°
Vertical beamwidth	15° ± 2.5°



## Direction Finding Antenna

Model | Specification

Direction Finding Antenna	
DF frequency range band 1	300 - 1000 MHz
DF frequency range band 2	1000 - 3000 MHz
Reference antenna	30 - 6000 MHz
Nominal input impedance	50
Antenna type	e-element DF interferometer for 2-channel receiver or 5-channel receiver
Polarisation	vertical

## Spiral Antenna X-band

Model | Specification



SKU	Frequency range (GHz)	VSWR, TYP.	Gain (dB)	Impedance (Ohm)	Output Type	Dimensions [WxLxH](mm)	Connector	Cover
RA-WC-NFF-131301	8 - 12	2:1	6	50	Coxial	32x32x200	SMA Female	Plastic

## RAIN ALLIANCE

We, Nextwaves Industries, are a proud member of the RAIN Alliance. As a pioneer in Vietnam's RFID sector, we are dedicated to promoting the universal adoption of UHF RFID technology. By aligning with RAIN standards, we ensure our ecosystem of tags, readers, and antennas delivers global interoperability and connects billions of everyday items to the internet.



## Partners

We are proud to stand alongside global leaders in the IoT and RFID sectors. Our network of strategic partners enables us to source the finest materials and leverage the latest chip technologies. Together, we are building a seamless infrastructure that connects physical assets to digital data with unmatched precision.



## Shipping & Delivery

We ship worldwide, ensuring our standard product reaches customers wherever you are located.



## Contact Us

Talk directly to our team about partnership opportunities and explore how we can collaborate for mutual growth.

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