

# ACCELERATE THE IoT WITH UCODE® 9



With UCODE 9, the most demanding RAIN RFID tagging applications get a boost, so retailers and smart-logistics companies can accelerate their IoT adoption.

## TARGET APPLICATIONS

- Fast, highly accurate omnichannel retail processes
- Real-time, point-to-point tracking for parcels and baggage
- Precise tracking for retail supply chains, from source to store
- High-speed store checkouts for better customer experiences
- Loss prevention
- Brand protection
- Returns and warranty management

With its high-performance broadband design and worldwide compatibility, UCODE 9 is a drop-in replacement for UCODE 8 that delivers higher performance on a truly global basis. Advanced features, including sophisticated protection mechanisms and self-adjustment, deliver upgraded performance, while staying backwards compatible with existing UCODE 8 antenna designs.

## KEY FEATURES

- Read sensitivity: -24 dBm
- Write sensitivity: -22 dBm
- Encoding speed: 32 bits in 0.96 ms
- Drop-in antenna replacement for UCODE 8
- Self-adjust
- Memory safeguard
- Pre-serialization of 96-bit EPC

## KEY BENEFITS

- Generate accurate and fast inventory counts
- Save time and increase tag encoding throughput with EPC fast encoding
- Improve reading capability under challenging conditions
- Promote environmental sustainability

## DROP-IN REPLACEMENT

To enable fast transition to the latest chip technology, UCODE 9 may use the same antenna designs as UCODE 8. That means UCODE 9 can be used as a drop-in replacement for existing solutions and can help reducing tag design efforts and speeding up time to market.

## SELF-ADJUST FEATURE

Exposure to a wide range of environmental conditions can impact the accuracy of RAIN RFID tags, making it harder to create a unified label form factor that can be used across application categories. To maximize read rate in the present environment, UCODE 9 includes a self-adjustment feature that is used to automatically optimize chip sensitivity.

## MEMORY SAFEGUARD

The electronic product code (EPC) numbers and tag identifier (TID) codes that are part of the RAIN RFID tag's unique tracking identifier need to be protected to ensure data remains accurate and protected from harm. UCODE 9 safeguards the EPC and TID using a Memory Safety System based on two different mechanisms, the error correction code (ECC) and the parity check, to ensure the trustworthiness and safety of UCODE 9 data.

- **ECC protects EPC numbers** — The ECC algorithm automatically detects and corrects potential single-bit errors in the entire UCODE 9 memory, and can also be used to detect and flag multi-bit errors.
- **Parity check protects TID codes** — For those applications that use the manufacturer-programmed TID code, in combination with the EPC number, the parity checker detects possible changes to the TID code.

## THE CHOICE FOR SUSTAINABILITY

- **RAIN RFID for IoT helps produce only what is needed – reducing waste**
- **UCODE 9 higher chip performance supports the trend towards smaller RFID antennas**
- **For example, if a tag with an antenna size of 50x30mm was reduced to 42x20mm, up to 44% of aluminium and plastic would be saved**

UCODE 9		
Performance	Read sensitivity	-24 dBm
	Write sensitivity	-22 dBm
	Self-adjust	Yes
Memory	EPC memory	96-bit
	TID memory	96-bit
	Kill password	32-bit
	Endurance/data retention	100k / 20y
	Memory safeguard	Yes
	Block write (32-bit)	Yes
	Permalock	One-time lock
Ambient Conditions	Temperature range	-40 to +85 °C
Delivery Type	Wafer diameter	12"
	Large gold (Au) pads	Yes

## ORDERING INFORMATION

UCODE 9			
Product	Delivery Form	Type	12NC
UCODE 9	Die on sawn 12" wafer; large pads	SL3S1206FUD2/HAA	9353 9659 6046