



**Research
Design Lab**



Handheld UHF RFID Reader

- RDL2000

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1. Overview

Handheld UHF RFID Reader is a portable device used for real time tracking and monitoring of tagged items/assets. The device can be paired with Bluetooth wireless technology enabled host (Android/IOS) using custom designed application software. The device is enabled with the world's no.1 Impinj Indy R2000 high performance chip which is compliant with EPC C1G2 (Global Class 1 Generation 2) protocol with operating frequency of 840~960MHz. The reading distance covers 1 - 3 meters. It is suitable for logistics, retail, healthcare, complex assets management and numerous other fields.

2. Features

- Rugged yet compact and lightweight for ease of use.
- Ergonomic design provides superior user comfort
- EPC Global Class 1 Generation 2 / ISO 18000-6C.
- Operating frequency of 840~960MHz.
- 1 - 3 meters of reading distance.
- Bluetooth Connectivity Option.
- LBT functionality.
- Dense Reading Mode (DRM).
- Inventory Speed more than 400 tags per second.
- Prolonged usage capabilities with good battery pack.

3. Advantages

- High inventory accuracy
- Real-time audit and traceability.
- Reduced Labour Cost.
- Counterfeit deterrence.
- Demand forecasting.
- Increased Sales.
- Better product consistency.
- Increase productivity and production uptime.
- Supply chain visibility

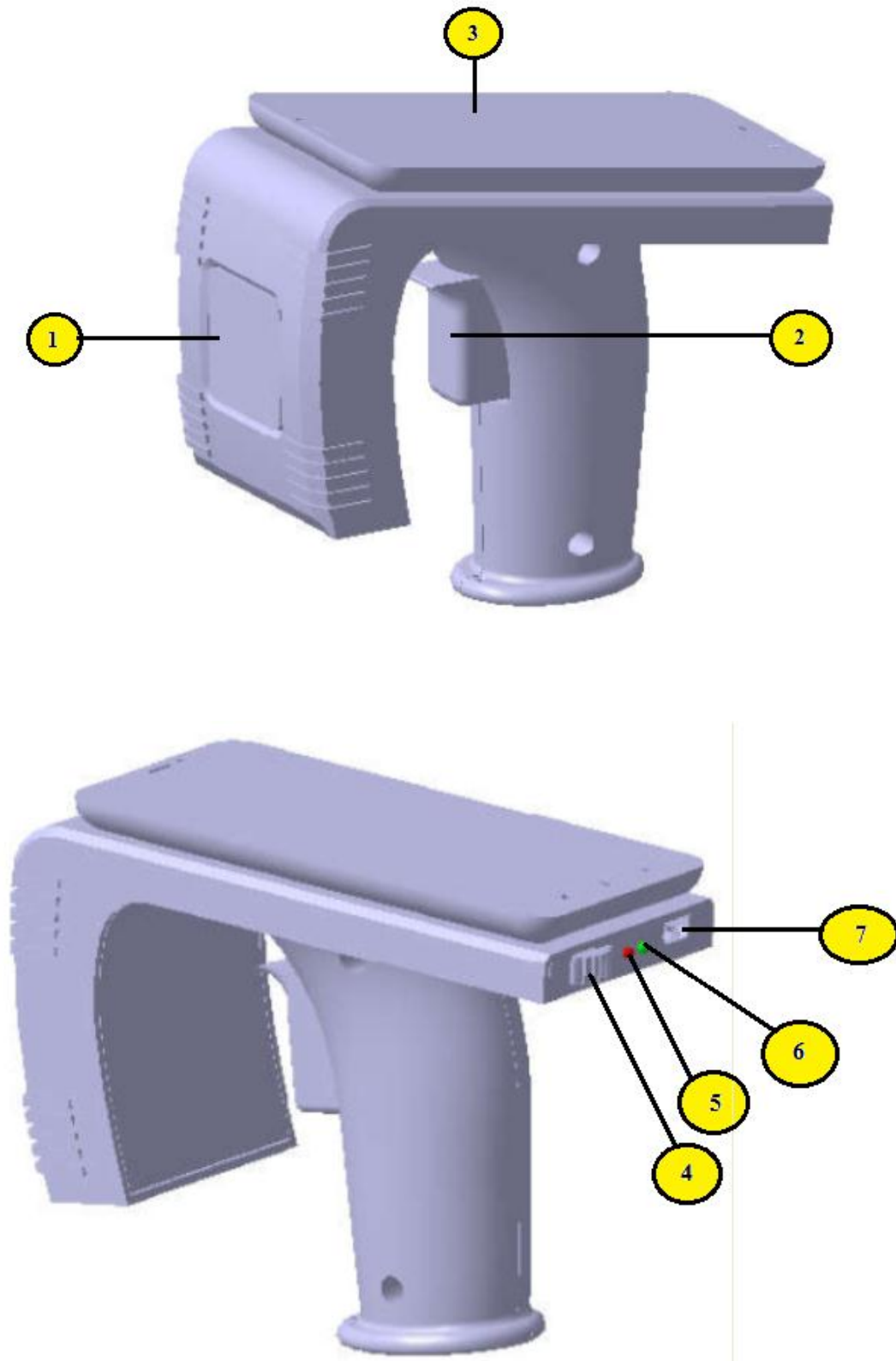
4. Application

- Supply Chain Management
- Inventory and cycle counting
- Asset management.
- Identity management/credentialing
- Inspections and code enforcement
- Toll Gates.
- Replenishment.
- Document and folder tracking
- Patient location tracking
- Pharmaceutical Industry
- Library Management.
- Retail and Logistics.
- Maintenance and Repair.
- Oil and Gas Industry.

5. Specification

RF IC	Impinj Indy R2000
Protocol	EPC Class 1 Gen 2 / ISO 18000-6C
Reading Distance	1 - 3 meters
Inventory Speed	>400 tags/sec
DC Power	3.6V – 5.5V
Fixed Current	1.5A
Standby Current	≤ 1 mA
Frequency range	840~960 MHz
Channel bandwidth	≤250 KHz
Communication protocol	Asynchronous serial ports protocol
Starting time	≤ 50 ms
Radio-frequency power rising time	≤500 μs
Radio-frequency power dropping time	≤500 μs
5 Frequency stabilizing ratio	±20 ppm
Working temperature	-20 ~ +70 degree C
Storage temperature	-40 ~ +85 degree C
Relative humidity	10% ~ 90% RH
Dimension (LXWXH)	150 x 155 x 155 mm
Battery Capacity	
Working hours	

6. UHF RFID Reader Handheld GUN Parts



1. RFID Antenna
2. Trigger Button
3. Phone
4. Power Switch
5. Power indicator
6. Scanning Indicator
7. USB Connector for charging only.

Description of Each Part

Part	Description
UHF RFID Antenna	The 840~960MHz UHF RFID tag reader area.
Trigger Button	Allows you to perform scan for an RFID tag
Power LED	Illuminates red when powered on.
Status LED	Illuminates green if the scan is successful.
USB Connector	Used during charging.
Phone	Phone can be inserted or removed any time.
Power Switch	Controls Power ON and OFF the device.

7. Application Note

7.1. Pharmaceutical Industry



Use Cases and ROI for RFID in Pharmaceuticals:

Supply Chain

- Cold Chain
- Electronics Proof of Delivery
- Recall management
- Safety stock or vendor managed inventory.
- Distribution metric improvements, such as on-time delivery and cost improvements.
- Supply chain effectiveness through visibility.

Sales Enablement

- Inventory positioned in forward distribution and customer locations.
- Ease of multi-industry labeling from manufacturing through retail.

Patient / Hospital

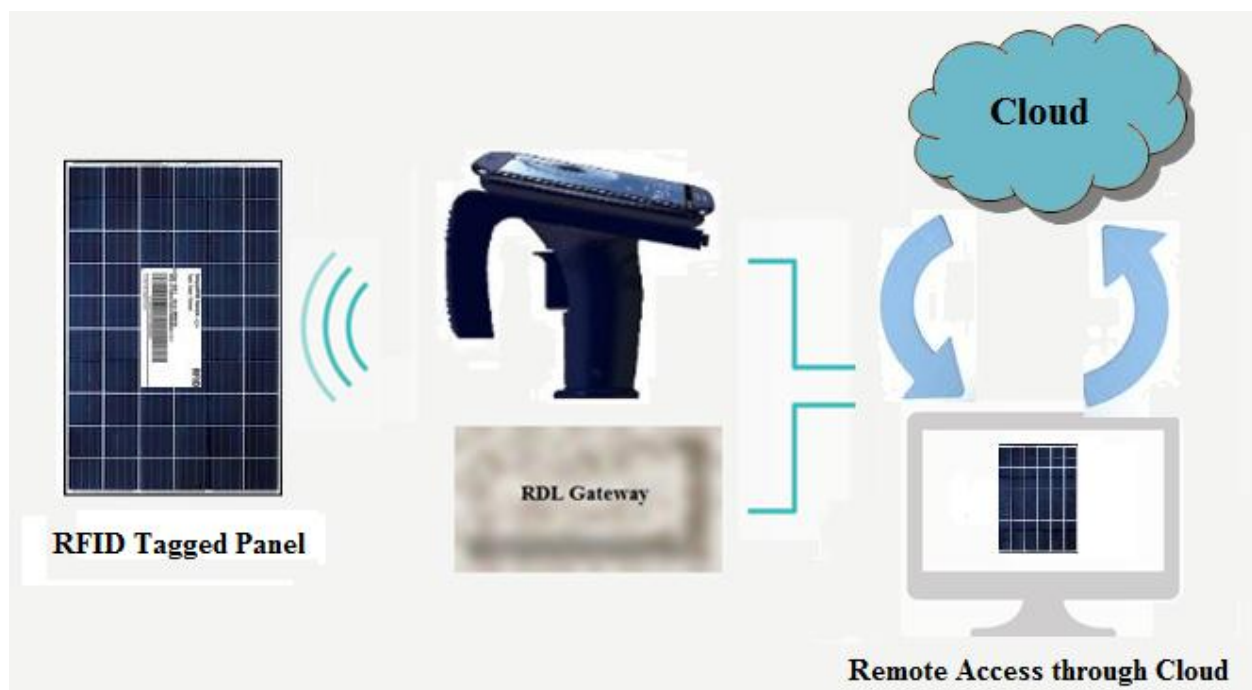
- In-hospital accurate dispensing.
- Record keeping for controlled substances.
- Inventory management.
- At home dispensing and treatment monitoring.

Product / Financial Planning:

- End-of-Life / off patent.
- Monitoring global supply of goods to monitor manufacturing and decisions about EOL.



7.2. Solar Power Plant



Benefits:

- Real-time audit and traceability.
- Decreasing lost and stolen supplies.
- Elimination of error prone due to manual audit processes.
- Time profound line of sight oversights are no longer required.
- Adaptation the use of current Panel inventory.
- Improved manageability through single unified panel registration system across multiple sites
- Decreased workload on panel administrators, allowing redeployment to other critical projects
- Reducing the time staff spends searching for inventory of panel.

7.3. Library Management



Benefits:

- Rapid check-out / check-in.
- Simplified patron self-check-out / check-in
- High reliability
- High-speed inventorying
- Automated materials handling
- Long tag life

7.4. Transportation



Applications

- Baggage sorting and routing.
- Exception management (rapid identification of bags that need to be removed for passengers who are not on the plane).
- Maintenance, Repair and Overhaul (MRO).

Benefits

- Baggage sorting and routing.
- Increased baggage throughput.
- Reduce labor costs.
- Improve security and safety.
- Cost-effectively comply with security regulations.
- Eliminate the many costs associated with a mishandled bag.

7.5. Toll Gates



Benefits

- Increases patron convenience and safety with nonstop payment
- Improves traffic flow
- Reduces patron commute time
- Reduces traffic congestion
- Lowers patron fuel use
- Reduces emissions which are a major cause of pollution
- Reduces need for new roads
- Reduces operating costs for toll authorities
- Provides proven reliability.

7.6. Retail Industry

7.6.1. Fashion



Application

- Inventory and cycle counting.
- Receiving.
- Replenishment.
- Item locating.
- Loss detection/prevent.
- Demand forecasting.

Benefits

- High inventory accuracy.
- Maintain real time inventory information —without any labor costs
- Reduce out of stocks.
- Minimize markdowns
- Reduce inventory carrying costs.
- Increase associate efficiency — associates are free to spend more time serving customers
- Increase sales.

7.6.2. Grocery Retail



Benefits

- Corporate-wide management.
- Labor cost savings.
- Better product consistency.
- Increased product shelf-life

7.7. Manufacturing



Benefits

- Supply chain visibility
- Inventory Management, stock checking and computer assisted ordering.
- Real time demand visibility
- GPS Tracking
- Access control and Personnel management
- Asset management
- Personnel Safety

7.8. Construction



Benefits

- Absence tracking
- Recording of working hours
- Inventory tracking
- Disaster recovery
- Asset tracking
- Site access control
- Recording service and maintenance records

7.9. Distribution and Warehousing



Applications

- Shipping and receiving.
- Put-away and picking.
- Cross-docking.
- Returnable Transport Item (RTI) management.
- Inventory

Benefits

- Achieve near-100 percent order and shipping accuracy.
- Process orders up faster.
- Improve workforce efficiency - reduces labor costs.
- Improve inventory turns.
- Automate advanced shipping notice (ASN) delivery and receipt.
- Improve customer and trading partner satisfaction by delivering the right items on time, every time

7.10. Agriculture



Benefits

- Remote stand-alone tag sensors that monitor temperature and moisture levels in hay and silage making
- Temperature and humidity monitoring of food products from production to supermarket even while in transit.
- Precision irrigation - Smart sensor array for scheduling irrigation in cotton.
- Greenhouses - Remote sensing with RFID, spectral imaging and environmental sensing in a greenhouse.
- Greenhouse - RFID tracking of potted plants from nursery to distribution.
- Automatic machine identification in cotton harvesting.
- Microbial growth models combine with information from active RFID.

7.11. Oil and Gas



Application

- Industrial asset management.
- Operator rounds.
- Employee safety.
- Automated Metering Infrastructure.
- Plant security.
- Accurate in-the-field inventory

Benefits

- Increase productivity and production uptime.
- Real-time access to asset maintenance and condition records.
- Increase asset utilization.
- More efficient and cost-effective regulatory reporting.
- Improve worker safety by ensuring any necessary evacuations are complete.

7.12. Asset Management



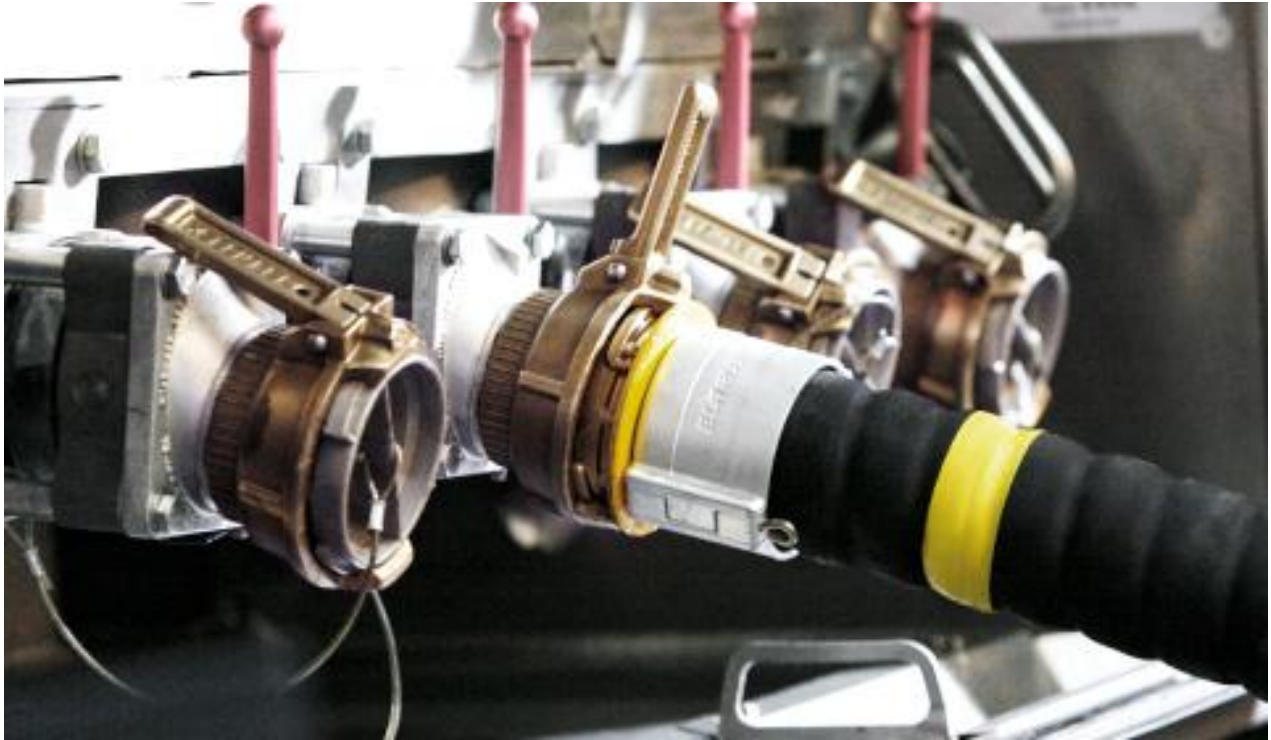
Application

- Asset inventory, tracking and management.
- Asset inspections, maintenance and repair.
- Mobile device asset management

Benefits

- Maximize asset lifecycle and improve asset utilization.
- Minimize asset replacement costs.
- Increase worker productivity.
- Enable rapid and cost-effective inventory.

7.13. Valve Tracking



Benefits:

- Location tracking and inventory control
- Onsite identification
- Onsite inspections
- Onsite replenishment.
- Counterfeit deterrence.

8. UHF RFID Application Based Tags

- **Laundry Tag**



Application:

Asset Management, Laundry Management, Lenin Management.

- **Metal mounted Gas cylinder tag**



Application:

CNG Cylinder Management, Civil LPG cylinder safety and traceability management.

- **Anti-tamper tag**



Application:

Vehicle Identification, Manufacturing, Logistics, Supply Chain Management, Digital Inventory, Retail, Asset Management.

- **Single use seal tag**



Application:

Used for Goods tracking, Parcels tracking, Container seals, Food traceability.

- **Adhesive Label**



Application:

Used on Plastic Items and Vehicles.

- **Metal tag**



Application:

IT asset management, Parking lot, Auto parts, Iron and steel industry, , Manufacturing, Logistics.

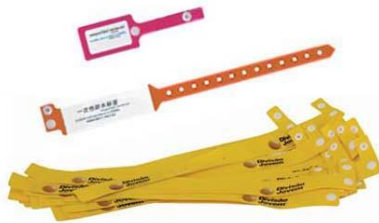
- **Hang Tag**



Application:

Cloth Warehouse Management,
Logistic management, Asset
management.

- **Wristband tag**



Application:

Hospital (Patient Management),
Sports (Time tracking).

- **Paper Tag**



Application:

Library, Databases rooms, Press ,
Jewelry management, Watch
management.

- **Anti-metal Tag**



Application:

IT asset management, Tools management, Smart shelf , Pallet..

- **Ear Tag**



Application:

Animal tracking

- **PVC Label**



Application:

Glass asset management, Vehicle Management, Airline baggage management

- **Tire tag**



Application:

Tire Industry

9. SDK

RDL offers Standard Android SDK for Handheld UHF RFID Reader along with the product. We also offer Customized Android SDK based on the customer requirements.

10. Our Services

Along with our standard products we also offer products mentioned below.

- We provide Customized Products (Hardware and Software) based on the customer requirements.
- We provide OEM Services based on the customer requirements.
- We provide ODM Services based on the customer requirements.

11. UHF RFID Other related Products

[UHF RFID Button Laundry tag](#)



[UHF RFID Laundry tag](#)



[UHF RFID Reader - Bluetooth](#)



[UHF RFID Reader - USB](#)



[UHF RFID Reader- Wi-Fi](#)



[UHF RFID Reader- Ethernet](#)



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