

## UHF 900MHz Passive RFID Systems: Best Passive Communication Range

WiBorne offers UHF RFID systems for seeing the widest use in supply-chain and retail applications. The 900MHz EPC UHF RFIS is the best available frequency for distances of meters, effective around metals with range up to 10 meters. It is good with non-Line-of-Sight (NLoS) communication, high identification rate, reasonably controlled read zone through antenna directionality.

Applications includes Logistics (identification of trolleys, parcels, animals, boxes etc), road tolls, automated vehicle identification (AVI), sport timing, access control / ticketing, tracking goods in the global supply chain, pharmaceuticals, tracking of airline baggage, document, express parcel, library applications, and life sciences goods.

### WiBorne Indoor / Outdoor Readers

UHF-1000 Reader is designed as a sophisticated RFID Readers Platform for both indoor and outdoor. These are built with premium RF performance and operating stability 4 reading points, Ethernet remote configuration, C++/Java API supporting makes UHF-1000 the most suitable for harsh, noisy, challenging surroundings. Our RFID readers can scan hundreds of UHF tags simultaneously.

### EPC Gen2 and ISO 18000 Ready

Evolving from UHF-1000 over 5 meters ISO reading, UHF-1000 is fully compliant with EPC Gen2 and ISO 18000 standards, with best reading performance on the market.

### Intelligent Reading Environment

Weather proofed 8 antennas, multi-readers, intelligent reader, smart edge architecture or functions. We provide the most competitive cost. Work with WiBorne to enjoy your ideal RFID systems with best ROI. Leveraging Asia's world famous hardware support, along with logistic business models from the States, WiBorne adopts progressive steps to enable intelligent RFID environment:

- RFID Intelligent Integrated API: to verify or conduct trials with flexibility and cost efficiency. WiBorne RFID API can be applied to a WinCE based industrial computer with ALE ready.
- Intelligent RFID Modules (RU-900), a combination of UHF-1000 and API. RU-900 is flexible to adapt variety of frequency to achieve high RFID protocol performance requirement.

## UHF Band EPC Gen 2 and ISO 18000 Reader: UHF-1000

### Product Feature



- ISO 18000 6B Fixed Reader or US UHF Band EPC G2 Fixed Reader
- 4 reading points, Ethernet remote configuration. Power adjustment, .Net/Java API supported makes this reader the most suitable for harsh, noisy, challenging surroundings.
- IP-55 Protection suits for most application environment, especially for outdoor usage.
- PoE Power over Ethernet design makes it easy for installation.
- Thorough API support for various development environment
- High reliability – Telecommunication design philosophy
- Extreme ingenious platform for customization or lean adoption
- Low Cost/Feature ratio, lowering the barrier to deploy RFID System
- Certified by EPCglobal with great reading performance

<b>Model No</b>	UHF-1000
<b>Operation Frequency</b>	902MHz ~ 928MHz
<b>RF Output</b>	30 dBm, 4W EIRP
<b>Power Adjustable</b>	Stepsize: 1dB / Control Range: 24-30dBm
<b>RFID Protocol</b>	ISO 18000 6C / EPC CIG2 V.1.0.9 Multi-Reader Mode
<b>Humidity</b>	0 ~ 99% Non-Condensing
<b>Modulation</b>	Amplitude Modulation
<b>Operation Channels</b>	50
<b>Occupied Channel</b>	500KHz
<b>Operating Temperature</b>	-22 ~ +50 degree C
<b>Storage Temperature</b>	-40 ~ +70 degree C
<b>Antenna System</b>	8 Bi-static antenna ports, female reverse polarity TNC connectors, 6 meter cable length.
<b>Power Supply</b>	Power over Ethernet 48Volt
<b>Communication Interface</b>	Ethernet TCP/IP, DHCP, HTTPS / WiFi*
<b>LAN/Power/GPIO Interface</b>	M12 Series – 8P
<b>Indicators</b>	Power / Tx / Rx
<b>GPIO</b>	Output 1, 2, Input 1; High: +5V; Low: 0V
<b>Dimension / Weight</b>	287 mm x 252 mm x 56.5mm / 3.155Kg
<b>Protection</b>	IP55
<b>Reader API Support</b>	.NET / JAVA

## UHF RFID Reader Module

<b>Model No</b>	RU-900
<b>RFID Protocol Support</b>	EPC Gen2; ISO 18000-6C
<b>Support EPC DRM</b>	Yes
<b>Regional Support</b>	US (FCC 47 CFR Part 15, Subpart C Section 15.247) EU (ETSI EN 302 208-1V1.1.1)
<b>Linking Frequency</b>	250KHZ (M=4); 300KHZ (M=4); 250KHz (M=2) (support DRM)
<b>Antenna Connectors</b>	2 MMCX connectors
<b>Antenna Type</b>	Monostatic
<b>RF Power Output</b>	+5 ~ +30 dBm in 1 dB step (Multi-Reader Mode) +5 ~ +24 dBm in 1 dB step (Dense-Reader Mode)
<b>Frequency</b>	US 902-928MHz EU 865-868MHz
<b>Physical</b>	15 x 2 pin connector (BOX Header 1.27mm)
<b>Signaling</b>	UART with 3.3/5V logic levels USB 2.0 full speed with 3.3/5V logic levels
<b>GPIO Sensors and Indicators</b>	2 programmable GPIO with 3.3/5V logic levels
<b>DC Power</b>	5.0VDC / 1.3A (max)
<b>Operating Temperature</b>	-20 ~ + 55 C
<b>RFID ASIC</b>	Intel R1000
<b>Processor</b>	Atmel AT91SAM7S-256 (with Flash Memory 256kB)
<b>GPIO</b>	Output 1, 2, Input 1; High: +5V; Low: 0V
<b>Dimension (LxWxH)</b>	86 x 53 x 7 mm

## UHF RFID Antennas



**OA-900RM**  
RFID Reader Antenna



**OA-900RP**  
Flat Panel Reader Antenna

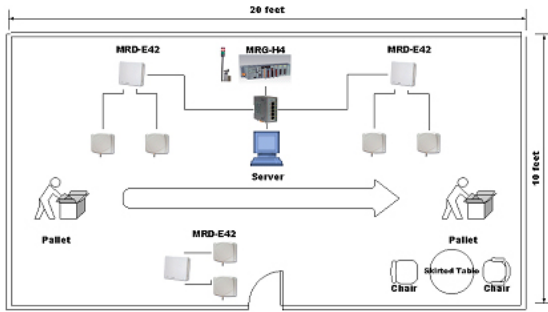
<b>Model No</b>	OA-900RM
<b>Frequency Range</b>	902 - 928 MHz
<b>gain</b>	6 dBi
<b>VSWR</b>	< 1.3
<b>Polarization</b>	CIRCULAR
<b>3 dB Beamwidth (l)</b>	Horizontal: 70° (typ); Vertical: 65° (typ)
<b>Front to Back Ratio</b>	20 dB
<b>Axial Ratio</b>	3 dB
<b>Max Power</b>	75W (CW) at 25°C
<b>Dimensions (LxWxD)</b>	140X140X30 mm

<b>Model No</b>	OA-900RP
<b>Regulatory Compliance</b>	RoHS , CE 0682
<b>Frequency Range</b>	902 - 928 MHz
<b>Gain</b>	9 dBi (min)
<b>VSWR</b>	1.5:1 (max) 1.3:1 (typ)
<b>Azimuth 3 dB Beamwidth</b>	58° (typ)
<b>Elevation 3 dB Beamwidth</b>	70° (typ)
<b>Polarization</b>	DUAL RHCP+LHCP
<b>Boresight Misalignment Between Ports</b>	Azimuth : 4° (max); Elevation: 7° (max)
<b>Tilt</b>	Azimuth: 2° (max); Elevation: 6°
<b>Side Lobes Level @ ±90°</b>	-12 dB (max)
<b>Axial Ratio at Boresight</b>	3 dB (typ) 4 dB (max)
<b>Port to Port Isolation</b>	-35 dB (min) , -40 dB (typ)
<b>F/B Ratio</b>	-20 dB (max)
<b>Input Impedance</b>	50 (Ohm)
<b>Input Power</b>	6 W (max)
<b>DC Resistor</b>	10k Ω
<b>Dimensions (LxWxD)</b>	536x360x26 mm
<b>Orientation</b>	Rectangular
<b>Weight</b>	2.0 kg (max)
<b>Connector</b>	2 X Reverse Polarity TNC
<b>Radome</b>	Plastic UV Resistant per ETSI 300
<b>Base Plate</b>	Aluminum with chemical conversion coating
<b>Outline Drawing</b>	RD41638800C

<b>ENVIRONMENTAL (OA-900RP)</b>				
TEST	STANDARD	DURATION	TEMPERATURE	NOTES
Low Temperature	IEC 68-2-1	72 h	-55°C	-
High Temperature	IEC 68-2-2	72 h	+71°C	-
Temp Cycling	IEC 68-2-14	1 h	-45°C +70°C	3 Cycles
Thermal Shock No-Operating			-30°C to +70°C	Ramp 30°C/min
Humidity	ETSI EN300-2-4 T4.1E	144 h	-	95%
Water Tightness	IEC 529	-	-	IP54
Dust Resistance				IP54
Solar Radiation	ASTM G53	1000 h	-	-
Ozone Resistance	ETSI 300			
Flammability	UL 94	-	-	Class HB
Quasi Random Vibration				20g rms for 4 hours
Vehicle Vibration Operating	1g rms, 10-500 Hz, in 3 axis			6 hours total, 2 hr in each axis. Accelerated wear – an additional 50hrs in worst case axis.
Mechanical Shock Operating	10g, 11 msec, half sine pulse			

## Intelligent API for Integration

WiBorne Intelligent API offers communication between WiBorne RFID Reader (UHF-1000) and Data Server such as Microsoft BizTalk. This integrate RFID systems to automate processes and communicate across global processes, partnerships, and supply chains. With any embedded system comprises hardware platform, Digital I/O, embedded operating system platform, application software, designed to manage RFID networks and handle the resulting streams of data before they are passed on to data server. WiBorne Intelligent API filters redundant data and only passes information along that is requested or constitutes a change of situation



### Solution Feature

- Configure your RFID network to handle different business scenarios that are specific to an item, a pallet, and other criteria.
- Manage the historical data and provide the flexibility to draw on the relevant data at any given point of time.
- Handle exceptional conditions such as wrong shipments, wrong locations, missing items, damaged items or discrepancies between documents and generate actionable alerts and notifications.

## UHF Tags Tested

Item	Tag Vender & Model
<b>EPC G2 Tags</b>	
1	KSW – NN - Excalibur
2	KSW – NN - Templar
3	TI-RI-UHF-00C01-03
4	Avery Dennison AD 220
5	Omron V740 Inlay
6	UPM Rafsec OneTennaTM
<b>ISO 18000 6B</b>	
1	UPM Rafsec "Square 2" Tag (UCODE 1.19)
2	UPM Rafsec "Shipping Label" Tag
3	UPM Rafsec "MINI Dipole" Tag
4	Hard Shield UCODE 1.19
5	Windshield Tag UCODE 1.19

