优频科技
URadio Systems

Wi-Fi RFID Systems

Real Time Locating, Auto Identification, Wireless Sensing

Introduction

Radio-frequency identification (RFID) is an intangible automatic identification technology. Through radio signal, RFID systems automatically identify the targets and obtain relevant data without human intervention. RFID systems identify various moving or still objects, such as, equipment, vehicles and people simultaneously. RFID is widely used in enterprise to improve the efficiency of inventory tracking and asset management.

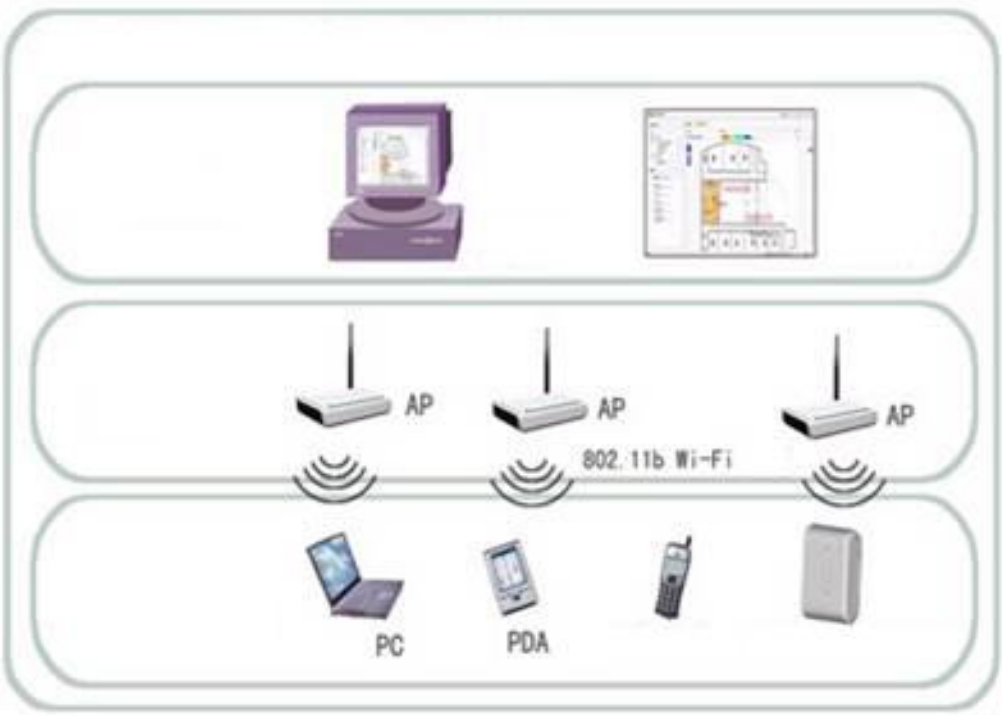
URadio Systems' innovated Wi-Fi RFID is an active RFID system based on the widely adopted Wireless LAN (or called Wi-Fi). It supports the transmit-only protocol IEEE 802.11. Wi-Fi RFID system is characterized by long range, accurate reading, low total cost of ownership, and easy use. The unique capability of Wi-Fi RFID system is to track the precise location of personnel and assets. Wi-Fi RFID system consists of tags, Wi-Fi AP (Access Point) and tracking software. URadio Systems' Wi-Fi RFID supports various ranges of APs including Cisco, Aruba, Ruckus and more.

How it works

Wi-Fi RFID tag stores the unique ID (MAC address) and sensor data in a certain format. In practice, the tag is attached to asset or personnel. Tag transmits its ID and data periodically. Wi-Fi APs automatically scan the ID and the data from the tag, and transmit to computer for further processing to achieve automatic identification and real-time tracking and locating.

System Components

Wi-Fi RFID system consists of Wi-Fi terminals, APs, and Server software, as shown in the below figure:



1. Wi-Fi Terminal
   a) URadio Wi-Fi Tags (URT-200): Each tag has unique 48 bit ID, battery powered
   b) Wi-Fi Phones, Pads, Laptops including iOS equipment
2. Wi-Fi AP
   a) Enterprise grade APs: Cisco, Aruba, Trapeze, Strix, Meru, Siemens, etc. (Note: AP or AC must support reporting of terminal MAC and RSSI function).
   b) URadio AP Locators (URL series): In addition to normal AP function, AP locator can scan WiFi tag MAC and alert.
3. Tracking and Locating Server: Software for record Tag ID and calculating tag position.

Advantages of Wi-Fi RFID System

- Based on standard Wireless LAN IEEE 802.11;
- Transmit only Wi-Fi tag with low power and low cost, not required to associate with AP
- Reuse of most existing WLAN network, keeping the infrastructure cost low ;
- Identify any kind of Wi-Fi equipment, such as smart phones, Pads;
- Track the precision location of personnel and assets up to 3 meters;
- Long range up to 300 meters or more;

- Reading error rate is almost zero;
- Easy integration, and simple operation;
- Healthier and safer with ultra-low power consumption and no radiation pollution.

Product Information

1) URT200 Tag Specifications

- Frequency：2.4GHz
- Communication Protocol：IEEE 802.11b, transmit only
- Transmit Power: Maximum 20dBm
- Anti-jamming capability: tolerance of high strength dropping and vibration
- Shelf Life without battery: up to 10 years
- ID number: unique 48 bits ID worldwide
- Communication data rate：Maximum 11Mbps
- Range: Up to 100m
- High Sensitivity: -80dBm
- Weight: About 30g(including battery)
- Size: 70mm x 33mm x 10mm
- Battery: Ordinary button battery (replaceable),up to 2 years battery life; Low battery LED warning
- Temperature: -20°C — +75°C
- Alarm function: Alarm push button
- URT220-A supports 125Khz exciter to wake up tag when the tag enters into 1-6m area

URT220-A

URT200-C

URT200-W

2) AP Locator (URL1500)

	URadio Wi-Fi AP Locator
Feature	General device for Wireless network;
Reading Range	Up to 100m indoor, 300m outdoor
Identified object speed	100km/h

Anti-collision	Simultaneously identifying up to 200 tags
Frequency	2.4GHz
Communication Protocol	Worldwide standard IEEE802.11b/g/n
Transmission Rate	Up to 300Mbps
Max Transmission Power	200mW
Operating Temperature	-40℃—85℃
Power	DC12V, option to support POE
Security	Support for the 64/128-bit WEP, WPA, WPA2
Three Functions	Support for the static IP address; DHCP support access to IP addresses; Support for static routing, ACL
Network Management	SNMP,Trap,TR069（FAT AP）; Windows-based platform configuration tool：Telnet、TFTP、FTP、HTTP、Web
Dimension	URL1500-I: 265*120*83 URL1500-R: 200*200*60 URL1500-U: 260*120*50

URL1500-I

URL1500-R

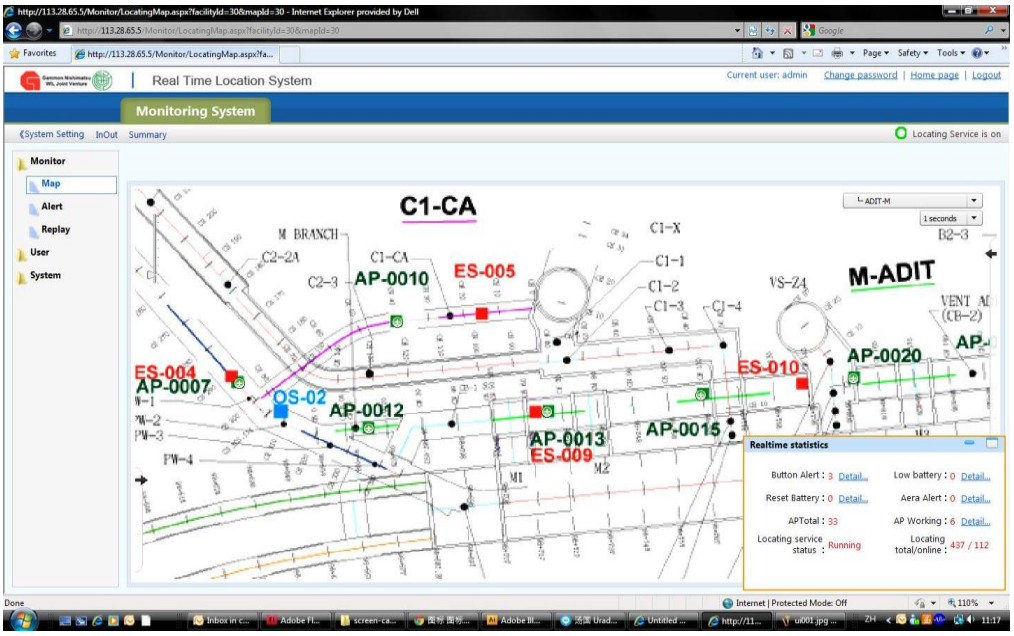
URL1500-U

3) Locating Server Software

Locating Server consists of Locating Engine and Locating Monitor. The main functions include:

- Real Time position and search
- Record and reply moving trace

- Area warning, button warning, disappeared warning
- Warning if leaving assigned path
- Web based map to display position and alert
- Support APIs to integrate with other software



The software platform requirement:

1. OS: Windows Server 2008
2. .NET 3.5 above
3. SQL Server 2005/2008
4. IIS 6.0 above
5. Flash Player 10.0 above

Applications

- Automatic people exit-entry management
- Underground miner tracking and locating management
- Hospital patient, staff and equipment management
- Senior care center to help elderly with wireless button call
- Warehouse inventory tracking and monitoring
- Container tracking and locating
- Manufacture work process control
- Shopping mall to track smart phones moving trace, and push ad to smart phones
- Museum to locate and push content to smart phone

Customer Case: Hong Kong Subway installed WiFi RFID systems to track

underground staffs, record in and out time, and count real-time numbers in zones.

For further information, please contact:

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