Radio Frequency Identification (RFID)
RFS-100

RFS-100 Parts Pack featuring conveyor belt and circular and polarized antennas

TelCom Technology

Quick View
- Provides an introduction to Radio Frequency Identification (RFID)
- Flexible and Modular Curriculum

System Components
- Textbook
- Workbook
- Parts Pack
- Instructor's Guide

Optional Support Material
Instructor Support Module (ISM)
- Material Required for Lecture
- Material Required for Each Lab Station
- Material Covered (Required Support Material and Associated Reading Assignment)
- Course Objectives
- PowerPoint Presentations (.ppt and .html versions)
- Lab Session

Classroom Hours
- 45 hours

Prerequisites
Recommended
- Knowledge of basic principles of computers

RFID is a global phenomenon. Driven by mandates from the world's largest retailers and the US Department of Defense, RFID promises to become as ubiquitous in the supply chain as barcodes. Imagine reading product codes from across the factory or warehouse floor while the products are still inside shipping crates. Image stores without "Closed for Inventory" signs, out-of-stock conditions, and even checkout counters. Already, businesses worldwide are deploying RFID, or evaluating how to do so. Setting up RFID-equipped supply chains that will read "every product code, every time, at every stage, under all conditions" is a daunting, disruptive task. It requires individuals who can plan, install, optimize, and maintain RFID systems. And Heathkit has created a course to provide the needed knowledge to RFID technicians.

CompTIA Authorized Curriculum Quality

HEATHKIT EDUCATIONAL SYSTEMS

455 Riverview Drive • Building 2 • Benton Harbor, MI 49022 USA • PHONE (800) 253-0570 • FAX (269) 925-2898 • www.heathkit.com • EMAIL info@heathkit.com

Radio Frequency Identification (RFID)

Course Content

Interrogation Zone Basics

- Describe interrogator functionality
- Describe configuration of interrogation zones
- Define anti-collision protocols
- Given a scenario, solve dense interrogator environment issues (domestic/international)

Testing and Troubleshooting

- Given a scenario, troubleshoot RF interrogation zones
- Identify reasons for tag failure
- Given a scenario, contrast actual tag data to expected tag data

Standards and Regulations

- Given a scenario, map user requirements to standards
- Identify the differences between air interface protocols and tag data formats
- Recognize regulatory requirements globally and by regions
- Recognize safety regulations/issues regarding human exposure

Tag Knowledge

- Classify tag types
- Given a scenario, select the optimal locations for an RFID tag to be placed on an item

Course Content (continued)

Design Selection

- Given a scenario, predict the performance of a given frequency and power as it relates to: read distance, write distance, tag response time, storage capacity
- Summarize how hardware selection affects performance

Installation

- Given a scenario, describe hardware installation using industry standard practices
- Given a scenario, interpret a site diagram created by an RFID architect describing interrogation zone locations, cable drops, and device-mounting locations

Site Analysis

- Given a scenario, demonstrate how to read blueprints
- Determine sources of interference
- Use analysis equipment such as a spectrum analyzer, determine if there is any ambient noise in the frequency range that may conflict with the RFID system to be installed
- Given a scenario, analyze environmental conditions end-to-end

Physics

- Identify RF propagation / communication techniques
- Describe antenna field performance / characteristics as it relates to reflective and absorptive materials

Course Content (continued)

- Given a scenario, calculate radiated power output from antenna based on antenna gains, cable type, cable length, interrogator transmit power

RFID Peripherals

- Describe installation and configuration of RFID printer
- Describe ancillary devices/concepts

Hands-On Experiments

1. Investigating RFID Tags
2. Investigating the RFID Interrogator
3. Setting up the RFID Reader
4. Bench Testing the RFID Reader
5. Configuring the RFID Reader Using Telnet
6. Installing the Alien RFID Reader Gateway Software
7. IEPC Tag Generations and Classes
8. Singulation of Class 1 Generation 1 Tags
9. The Command Line Interface
10. Tag Programming -- Part 1
11. Tag Programming -- Part 2
12. Singulation and Security
13. Exploring the Interrogation Zone -- Part 1
14. Exploring the Interrogation Zone -- Part 2
15. Exploring the RF Friendliness Pyramid
16. Using RFID to Determine Liquid Levels
17. Common Tag Problems
18. Tag Placement -- Part 1
19. Tag Placement -- Part 2
20. Linear Versus Circular Antennas
21. Exploring Tags in Motion
22. RFID Antenna Placement
23. Exploring Antenna Polarization
24. Using Multiple Antennas
25. RFID Applications

TC-RFS-100-10/2006-SM