

# RFID+™ Examination Objectives

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## Introduction

The skills and knowledge measured by this examination are derived from an industry-wide job task analysis (JTA) and have been validated by Subject Matter Experts from around the globe.

The CompTIA RFID+ Certified Professional (CRCP) candidate will have foundational RFID knowledge, typically 6-24 months of experience in the RFID industry and performs the following tasks as part of his or her job:

- Installation, configuration and maintenance of RFID hardware and device software
- Site surveys/Site analysis
- Tag selection, placement and testing

This examination blueprint includes test objectives and example content for the CompTIA RFID+ exam. Example topics and content are included to clarify the test objectives but are not comprehensive listings for the content of this examination. This blueprint may undergo additional minor modifications during the test development phase.

The table below lists the domains measured by this examination and the approximate extent to which they are represented in the exam.

Domain	% Of Examination
1.0 Interrogation Zone Basics	13%
2.0 Testing and Troubleshooting	13%
3.0 Standards and Regulations	12%
4.0 Tag Knowledge	11%
5.0 Design Selection	11%
6.0 Installation	11%
7.0 Site Analysis (ie. Before, during and after installation)	11%
8.0 RF Physics	11%
9.0 RFID Peripherals	7%
<b>Total</b>	<b>100%</b>

**Response Limits:** The examinee selects from four (4) or more response options, the option(s) that best completes the statement or answers the question. Distractors or wrong answers are response options that examinees with incomplete knowledge or skill would likely choose, but are generally plausible responses fitting into the content area. Test item formats used in this examination are:

**Multiple choice:** The examinee selects one option that best answers the question or completes a statement. The option can be embedded in a graphic where the examinee “points and clicks” on their selection choice to complete the test item.

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**Multiple response:** The examinee selects more than one option that best answers the question or completes a statement.

**Drag and drop items:** A drag and drop item is an item that requires the candidate to drag a graphic or text box to a correct destination.

## Domain 1.0 Interrogation zone basics

- 1.1 Describe interrogator functionality
  - 1.1.1 I/O capability
  - 1.1.2 Hand-held interrogators
  - 1.1.3 Vehicle mount interrogator
  - 1.1.4 LAN/Serial communications
  - 1.1.5 Firmware upgrades
  - 1.1.6 Software operation (GUIs)
- 1.2 Describe configuration of interrogation zones
  - 1.2.1 Explain interrogator to interrogator interference
  - 1.2.2 Optimization
  - 1.2.3 System performance and tuning
  - 1.2.4 Travel speed and direction
  - 1.2.5 Bi-static / monostatic antennas
- 1.3 Define anti-collision protocols (e.g., number of tags in the field/response time)
- 1.4 Given a scenario, solve dense interrogator environment issues (domestic/international)
  - 1.4.1 Understand how a dense interrogator installation is going to affect network traffic
  - 1.4.2 Installation of multiple interrogators, (e.g., dock doors, synchronization of multiple interrogators, antenna footprints)

## Domain 2.0 Testing and Troubleshooting

- 2.1 Given a scenario, troubleshoot RF interrogation zones (e.g., root-cause analysis)
  - 2.1.1 Analyze less than required read rate
    - 2.1.1.1 Identify improperly tagged items
  - 2.1.2 Diagnose hardware
    - 2.1.2.1 Recognize need for firmware upgrades

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- 2.1.3 Equipment replacement procedures (e.g., antenna, cable, interrogator)
- 2.2 Identify reasons for tag failure
  - 2.2.1 Failed tag management
  - 2.2.2 ESD issues
- 2.3 Given a scenario, contrast actual tag data to expected tag data

## Domain 3.0 Standards and Regulations

- 3.1 Given a scenario, map user requirements to standards
  - 3.1.1 Regulations, standards that impact the design of a particular RFID solution
- 3.2 Identify the differences between air interface protocols and tag data formats
- 3.3 Recognize regulatory requirements globally and by region (keep at high level, not specific requirements -- may use scenarios)
- 3.4 Recognize safety regulations/issues regarding human exposure

## Domain 4.0 Tag Knowledge

- 4.1 Classify tag types
  - 4.1.1 Select the RFID tag best suited for a specific use case.
    - 4.1.1.1 Pros and cons of tag types
    - 4.1.1.2 Tag performance
      - 4.1.1.2.1 Tag antenna to region/frequency
  - 4.1.2 Identify inductively coupled tags vs. back-scatter
  - 4.1.3 Identify the differences between active and passive
- 4.2 Given a scenario, select the optimal locations for an RFID tag to be placed on an item.
  - 4.2.1 Evaluate media and adhesive selection for tags
  - 4.2.2 Tag orientation and location
    - 4.2.2.1 Tag stacking (shadowing)
  - 4.2.3 Package contents
  - 4.2.4 Packaging
    - 4.2.4.1 Items
    - 4.2.4.2 Tags
    - 4.2.4.3 Labels
    - 4.2.4.4 Inserts

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- 4.2.5 Liquids
- 4.2.6 Metal
- 4.2.7 Polarization

## Domain 5.0 Design Selection

- 5.1 Given a scenario, predict the performance of a given frequency and power (active/passive) as it relates to: read distance, write distance, tag response time, storage capacity
- 5.2 Summarize how hardware selection affects performance (may use scenarios)
  - 5.2.1 Antenna type
  - 5.2.2 Equipment mounting and protection
  - 5.2.3 Cable length/loss
  - 5.2.4 Interference considerations
  - 5.2.5 Tag type (e.g., active, passive, frequency)

## Domain 6.0 Installation

- 6.1 Given a scenario, describe hardware installation using industry standard practices
  - 6.1.1 Identify grounding considerations (e.g., lightning, ground loops, ESD)
  - 6.1.2 Test installed equipment and connections (pre-install and post-install)
- 6.2 Given a scenario, interpret a site diagram created by a RFID architect describing interrogation zone locations, cable drops, device mounting locations

## Domain 7.0 Site Analysis (i.e., before, during and after installation)

- 7.1 Given a scenario, demonstrate how to read blueprints (e.g., whole infrastructure)
- 7.2 Determine sources of interference
  - 7.2.1 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
- 7.3 Given a scenario, analyze environmental conditions end-to-end

## Domain 8.0 RF Physics

- 8.1 Identify RF propagation/communication techniques

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- 8.2 Describe antenna field performance/characteristics as it relates to reflective and absorptive materials (may use scenarios)
- 8..3 Given a scenario, calculate radiated power output from antenna based on antenna gains, cable type, cable length, interrogator transmit power (include formulas in scenario)

## Domain 9.0 RFID Peripherals

- 9.1 Describe installation and configuration of RFID printer (may use scenarios)
- 9.2 Describe ancillary devices/concepts
  - 9.2.1 RFID printer encoder
  - 9.2.2 Automated label applicator
  - 9.2.3 Feedback systems (e.g., lights, horns)
  - 9.2.4 RTLS