



# ***Professionalism through Certification***

*The Institute for RFID Education, Research and Certification*

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## **Foundation Certificate Blueprint**

**Version 1.1**

**Date: November 30, 2014**

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# 1 Introduction

## 1.1 Purpose

The purpose of this document is to provide a blueprint for the RFID Institute’s first RFID Certification program (“Foundation Certification”).

## 1.2 Scope

The blueprint describes the topics to be covered in the exam, the weightings each will receive and the subtopics under area covered.

## 1.3 Document Management

All versions of this document are managed and controlled by the RFID Institute. The RFID Institute Secretary is responsible for maintaining this document and future iterations of this document.

## 1.4 Document Change History

Issue #	Date of Change	Changed By	Required Information
	02-Feb-12	Sanjiv Dua, Mark Brown	Original Draft
	05-May-12	Sanjiv Dua, Mark Brown	Revisions based on input from Board of Directors and members
1.0	03-Sep-13	Mark Roberti	The RFID Institute approved the blueprint for the Foundation Certification (with the proviso that the name might be changed), on Aug. 30, 2013. The document style was changed to conform to the Institute’s template.
1.1	30-Nov-14	Ian Robertson	Change of logo and name to reflect Board approved change of name for the Institute

## 2 Certification Description

This section describes the Foundation Certification.

### 2.1 Overview

*Test Title:* RFID Institute Foundation Certification (may be changed pending the results of market research).

*Credential Name:* RFID Institute Foundation Certified

*Intended Audience:* Practitioner (integrators, independent software vendor, solution providers), end-users or potential end users of RFID, college engineering or CS junior/senior, or graduates.

*Format:* Multiple-choice, multiple match

*Prerequisites:* None

*Length of Time for Exam:* 90 minutes (plus 30 minutes for special accommodations)

### 2.2 Test Domain Weightings

A key element of the test certification blueprint is the weightings given to each topic area, or knowledge domain. The table below represents the weightings the Board of Directors has assigned to each knowledge domain for the Foundation Certification.

Domain	Weighting	Percentage of items on exam
What is RFID?	High	15
Architecture Components	High	20
Privacy, Safety and Security	Medium	10
Standards and Regulations	Low	7
Provider Roles	High	10
Applications (what you can do)	Medium	10
Evaluation and Selection	Medium	13
System Design	Low	7
Deployment Steps	Low	8

### 2.3 Topics and Subtopics

The chart on the following pages details the topics and subtopics that will be covered in the RFID Institute’s Foundation Certification.

Knowledge Domains	Coverage in Foundation 0 – none (remove) 1-M - Mention 2- I – Intro 3- B – Brief 4- F – Full L – Later
1. What is RFID?	B
1.1. History of RFID	I
1.2. Introduction to RF Fundamentals	F
1.2.1. Frequency Bands	B
1.2.2. Propagation	B
1.2.2.1. Inductive	F
1.2.2.2. Capacitive	I
1.2.2.3. EM Radiative	F
1.2.2.4. Conductive	M
1.3. Active	I
1.3.1. UHF	I
1.3.1.1. 433 MHz	I
1.3.1.2. 850-950	I
1.3.2. WiFi	I
1.3.3. UWB	I
1.4. Passive	I
1.4.1. Inductively coupled (Near Field)	I
1.4.1.1. LF	I
1.4.1.2. HF + NFC	I
1.4.1.3. UHF	I
1.4.1.4. BAP (Battery Assisted Passive)	I
1.4.1.5. NFC	I
1.4.2. EM Wave coupled (Far Field)	I
1.4.2.1. UHF	I
1.4.2.1.1. 433 MHz	I
1.4.2.1.2. 860-960 (Supply Chain)	I
1.4.2.2. uW microwave	I
1.4.2.3. BAP (Battery Assisted Passive)	I
1.5. RTLS and Locationing	I
1.5.1. Active	I
1.5.2. Passive	I
1.5.3. GPS Integrated reads	I
1.6. Sensors	I
1.6.1. Passive (Battery assist)	I
1.6.1.1. Data logging	I
1.6.1.1.1. Temperature	M
1.6.1.1.2. Shock	M

1.6.1.1.3.	Vibration	M
1.6.1.1.4.	Humidity	M
1.6.1.1.5.	Tilt	M
1.6.1.1.6.	Light sensors	M
1.6.2.	Active	I
1.6.2.1.	Logging or transmitting	I
1.6.2.1.1.	Temperature	M
1.6.2.1.2.	Shock	M
1.6.2.1.3.	Vibration	M
1.6.2.1.4.	Tilt	M
1.6.2.1.5.	GPS	M
1.6.2.1.6.	Light sensors	M
1.7.	Related Technologies	I
1.7.1.	ZigBee	M
1.7.2.	RuBee	M
1.7.3.	Infrared	M
1.7.4.	Ultrasonic	M
2.	Architecture Components	I
2.1.	Tags	F
2.1.1.	Types of construction	B
2.1.2.	Components (circuit, antenna, battery, etc)	B
2.1.3.	Form factors (label, disc, ceramic, package, etc)	B
2.1.4.	Special purpose (tree nail, etc)	M
2.2.	Readers/Writers	F
2.2.1.	Types of readers	I
2.2.1.1.	Handheld	B
2.2.1.2.	Fixed	B
2.2.1.3.	PDA	M
2.2.1.4.	Phone	M
2.2.1.5.	Embedded (printers, tables, etc)	I
2.2.2.	Firmware	M
2.2.3.	Software (on-board, management)	I
2.3.	Antennas (Tag and Reader)	B
2.3.1.	Types	I
2.3.1.1.	Near field	B
2.3.1.2.	Far field	B
2.3.2.	Linear	B
2.3.3.	Circular	B
2.3.4.	Yagi	I
2.4.	Input devices	B
2.4.1.	Sensors	I
2.4.1.1.	Light Break	I
2.4.1.2.	Motion	I
2.4.1.3.	Weight	I
2.4.1.4.	Proximity	I

2.4.1.5. I/O connected data gathering sensors	I
2.4.2. Encoders (data encoders, wheels, belts)	I
2.5. Output Devices	B
2.5.1. Printers	I
2.5.2. Light Stacks	I
2.5.3. Buzzer/Horn	M
2.5.4. I/O connected controls and alerts	M
2.6. Software	B
2.6.1. Middleware	I
2.6.2. Applications	I
2.7. Network	B
2.7.1. Physical Network	I
2.7.2. Tag Network	I
3. Privacy, Security and Safety	B
3.1. Passwords	I
3.2. Kill Capabilities	M
3.3. Tag Storage	B
3.3.1. Data on tag	I
3.3.2. License plate	I
3.4. Physical Security (Securing the Environment)	I
3.5. Data Security and Encryption	B
3.5.1. Tag	I
3.5.2. Network	M
3.5.3. Application and Server	M
3.6. Privacy Best Practices, Risks, Controls	I
3.7. Safety	
3.7.1. Human Safety (RF Radiation, EM Interference)	B
3.7.2. Operational Safety	B
3.7.3. Hazardous Environments	B
4. Standards and Regulations – Introduction	I
4.1. ISO/IEC	I
4.2. IEEE	M
4.3. Government and Industry Specific	
4.3.1. GS1/EPC Global	I
4.3.2. Dash 7	M
4.3.3. AIAG	M
4.3.4. FAA	M
4.3.5. ARA	M
4.3.6. ATA	M
4.3.7. FDA	M
4.3.8. DOD	M
4.4. Regional/Country Specific	
4.4.1. FCC	I
4.4.2. ETSI/CEPT	I

4.4.3. IC	M
4.4.4. Proprietary	M
4.5. Environmental Regulations	I
4.5.1. HERO	M
4.5.2. Intrinsically Safe - ATEX	M
4.5.3. Non-Incendiary	M
4.6. Others	M
5. Ecosystem and Provider Roles	B
5.1. Consultant	F
5.2. Systems Integrator	F
5.3. VAR (Value Added Reseller)	B
5.4. Manufacturer	F
5.4.1. Tags	B
5.4.2. Readers	B
5.4.3. Other Hardware	I
5.5. Software	B
6. Applications	I
6.1. Open Loop (Supply Chain)	F
6.2. Closed Loop	F
6.3. Payments, Marketing	B
6.4. Business case / use case scenario	I
6.4.1. Business objectives	I
6.4.1.1. Process changes	I
6.4.1.2. Process elimination	I
6.4.2. Materials to be tagged	I
6.4.3. Read zone characteristics	I
6.4.4. Environmental challenges	I
7. Evaluate and Select	F
7.1. Speed	F
7.2. Distance	B
7.2.1. Read	B
7.2.2. Write	B
7.3. Accuracy	B
7.4. Reliability	B
7.5. Supportability	B
7.6. Physical fit	B
7.7. Robustness	B
7.8. Network Integration	I
7.9. Application and Systems Impact	I
7.10. Cost	B
8. Solution Design	
8.1. Tag Placement	B
8.1.1. Assessing tag location	B
8.1.2. Testing	I

8.1.3. Challenges	I
8.2. Reader Placement	
8.2.1. Shielding requirements	B
8.2.2. Sensor/Trigger Placement	I
8.2.3. Feedback device placement	I
8.3. Data flow between layers and components	B
9. Deployment Steps	
9.1. Site, Infrastructure Assessment, Site Survey	B
9.2. Workflow Analysis	B
9.3. Systems Analysis	B
9.4. Controlled pilot	I
9.4.1. Data review	I
9.4.2. Business Impact assessment	B
9.5. Commissioning	I
9.6. Rollout	I



