



RAINTM
A L L I A N C E

RAIN RFID Relevant Standards

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Purpose of the Standing Document

This document is intended as an information document. It contains an overview about standards that are relevant for RAIN RFID. The focus is on RFID related standards. It is updated as of the date shown

The document lists standards that are seen as relevant to be monitored for RAIN RFID.

The following types of standards are existing:

CATEGORY	DESCRIPTION
Air interface	Standard describing the air interface communication typically between a reader and a tag
Applications	Standards on application
Architecture	High level standards including architecture
Conformance	Conformance standards for verification of compliance to typically the air interface
Numbering	Standards that define numbering of tag data content
Performance	Performance standards for comparing devices against benchmarks
Others	Not covered in any type yet

A list of standards is available in the table below.

RAIN-RFID_List of Standards

Category	Number/Name	Title	URL	Status
Air interface	GS1 EPC UHF Gen2	GS1 EPC Radio-Frequency Identity Protocols Generation-2 UHF RFID Specification for RFID Air Interface Protocol for Communications at 860 MHz – 960 MHz, V2.1, 2018-07	https://www.gs1.org/standards/rfid/uhf-air-interface-protocol	Published
Air interface	ISO/IEC 18000-6:2013	Information technology -- Radio frequency identification for item management -- Part 6: Parameters for air interface communications at 860 MHz to 960 MHz General		Published
Air interface	ISO/IEC 18000-63:2021	Information technology -- Radio frequency identification for item management -- Part 63: Parameters for air interface communications at 860 MHz to 960 MHz Type C		Published
Air interface	ISO/IEC 29143:2011	Information technology -- Automatic identification and data capture techniques -- Air interface specification for Mobile RFID interrogators		Published
Air interface	ISO/IEC 29167-1:2014	Information technology -- Automatic identification and data capture techniques -- Part 1: Security services for RFID air interfaces		Published
Air interface	ISO/IEC 29167-10:2017	Information technology -- Automatic identification and data capture techniques -- Part 10: Crypto suite AES-128 security services for air interface communications		Published
Air interface	ISO/IEC 29167-11:2014	Information technology -- Automatic identification and data capture techniques -- Part 11: Crypto suite PRESENT-80 security services for air interface communications		Published
Air interface	ISO/IEC 29167-12:2105	Information technology -- Automatic identification and data capture techniques -- Part 12: Crypto suite ECC-DH security services for air interface communications		Published
Air interface	ISO/IEC 29167-13:2105	Information technology -- Automatic identification and data capture techniques -- Part 13: Crypto suite Grain-128A security services for air interface communications		Published
Air interface	ISO/IEC 29167-21:2018	Information technology -- Automatic identification and data capture techniques -- Part 21: Crypto suite SIMON security services for air interface communications		Published
Air interface	ISO/IEC 29167-22:2018	Information technology -- Automatic identification and data capture techniques -- Part 22: Crypto suite SPECK security services for air interface communications		Published
Air interface	ISO/IEC 22243:2019	Information technology -- Radio frequency identification for item management -- Methods for localization of RFID tags		Published
Air interface	ISO/IEC 15963-1:2020	Information technology -- Radio frequency identification for item management -- Part 1: Unique identification for RF tags numbering systems		Published
Air interface	ISO/IEC 15963-2:2020	Information technology -- Radio frequency identification for item management -- Part 2: Unique identification for RF tags registration procedures		Published
Air interface	ISO/IEC 29167-15:2017	Information technology -- Automatic identification and data capture techniques -- Part 15: Crypto suite XOR security services for air interface communications		Published
Applications	ISO/IEC 17363:2013	Supply chain applications of RFID -- Freight containers		Published
Applications	ISO/IEC 17360	Supply chain applications of RFID — Product tagging, product packaging, transport units, returnable transport units (RTIs) and returnable packaging items (RPIs)		Development
Applications	ISO/IEC 22603-1:2021	Information technology — Digital representation of product information — Part 1: General		Published
Applications	ISO/IEC DIS 22603-2	Information technology — Digital representation of product information — Part 2: Requirements for electronic devices with integral display		Development
Applications	ISO/IEC TR 24729-1:2008	Information technology -- Radio frequency identification for item management -- Implementation guidelines -- Part 1: RFID-enabled labels and packaging supporting ISO/IEC 18000-6C		Published
Applications	ISO/IEC TR 24729-2:2008	Information technology -- Radio frequency identification for item management -- Implementation guidelines -- Part 2: Recycling and RFID tags		Published
Applications	ISO/IEC TR 24729-3:2009	Information technology -- Radio frequency identification for item management -- Implementation guidelines -- Part 3: Implementation and operation of UHF RFID Interrogator systems in logistics		Published
Applications	ISO/IEC TR 24729-4:2009	Information technology -- Radio frequency identification for item management -- Implementation guidelines -- Part 4: Tag data security		Published

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Category	Number/Name	Title	URL	Status
Applications	ISO 20909:2019	Radio frequency identification (RFID) tyre tags		Published
Applications	ISO 20910:2019	Coding for radio frequency identification (RFID) tyre tags		Published
Applications	ISO 20911:2020	Radio frequency identification (RFID) tyre tags — Tyre attachment classification		Published
Applications	ISO 20912:2020	Conformance test methods for RFID enabled tyres		Published
Software	GS1 EPC ALE	GS1 EPC Application Level Events (ALE), V1.1, 2009-03	https://www.gs1.org/ale	Published
Software interface	GS1 EPC DCI	GS1 EPC Discovery Configuration & Initialization (DCI), V1.0, 2009-06	https://www.gs1.org/discovery-configuration-and-initialization-dci	Published
Software	GS1 EPC LLRP	GS1 EPC Low Level Reader Protocol (LLRP), V2.0, 2021-01	UPDATED URL COMING SOON	Published
Software	GS1 EPC RM	GS1 EPC Reader Management (RM), V1.0.1, 2007-05	https://www.gs1.org/reader-management	Published
Architecture	ISO/IEC 24753:2011	GS1 EPC Tagged-Item Performance Protocol (TIPP) Tagged-Item Grading: Testing Methodology Guideline, V1.0, 2017-07		Published
Architecture	ISO/IEC 24791-1:2010	GS1 EPC Tagged-Item Performance Protocol (TIPP) Tagged-Item Grading: Test Configuration Guideline, V1.1, 2017-07		Published
Architecture	ISO/IEC 24791-2:2011	GS1 EPC Tagged-Item Performance Protocol (TIPP) Tagged-Item Grading: Grade Definitions Guideline, V1.1, 2017-11		Published
Architecture	ISO/IEC 24791-3:2014	Information technology -- Radio frequency identification (RFID) for item management -- Software system infrastructure -- Part 3: Device management		Published
Architecture	ISO/IEC 24791-5:2012	Information technology -- Radio frequency identification (RFID) for item management -- Software system infrastructure -- Part 5: Device interface		Published
Encoding	GS1 EPC TDT	GS1 EPC Tag Data Translation (TDT) standard, V1.6, 2011-10, V1.6, 2011-10	https://www.gs1.org/standards/rfid/tdt	Published
Encoding	GS1 EPC TDS	GS1 EPC Tag Data Standard (TDS), V1.13, 2019-11	https://www.gs1.org/standards/rfid/tds	Published
Encoding	GS1 EPC TDT	GS1 EPC Tag Data Translation (TDT) standard, V1.6, 2011-10	https://www.gs1.org/standards/rfid/tdt	Published
Conformance	GS1 EPC UHF Conf	GS1 EPC UHF RFID Devices Conformance Requirements, V2.0.1, 2015-10, V2.0.1, 2015-10	https://www.gs1.org/standards/rfid/uhf-air-interface-protocol	Published
Conformance	ISO/IEC 18047-6:2017	Information technology -- Radio frequency identification device conformance test methods -- Part 6: Test methods for air interface communications at 860 MHz to 960 MHz		Published
Conformance	ISO/IEC 18047-63	Information technology — Radio frequency identification device conformance test methods — Part 63: Test methods for air interface communications at 860 MHz to 960 MHz		Development
Conformance	ISO/IEC 19823-10:2020	Information technology -- Conformance test methods for security service crypto suites -- Part 10: Crypto suite AES-128		Published
Conformance	ISO/IEC 19823-13:2018	Information technology -- Conformance test methods for security service crypto suites -- Part 13: Cryptographic Suite Grain-128A		Published
Conformance	ISO/IEC 19823-19:2018	Information technology -- Conformance test methods for security service crypto suites -- Part 19: Crypto suite RAMON		Published
Conformance	ISO/IEC 19823-21:2019	Information technology -- Conformance test methods for security service crypto suites -- Part 21: Part 21: Crypto suite SIMON		Published
Conformance	ISO/IEC 19823-22:2019	Information technology -- Conformance test methods for security service crypto suites -- Part 22: Part 22: Crypto suite SPECK		Published
Numbering	ISO/IEC 15961-4:2016	Information technology -- Radio frequency identification (RFID) for item management: Data protocol -- Part 4: Application interface commands for battery assist and sensor functionality		Published
Numbering	ISO/IEC 15962:2022	Information technology -- Radio frequency identification (RFID) for item management -- Data protocol: data encoding rules and logical memory functions		Revision

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Category	Number/Name	Title	URL	Status
Numbering	ISO/IEC 20248:2018	Information technology -- Automatic identification and data capture techniques -- Data structures -- Digital signature meta structure		Development
Numbering	ISO/IEC 15961-1:2021	Information technology -- Radio frequency identification (RFID) for item management: Data protocol -- Part 1: Application interface		Published
Numbering	ISO/IEC 15961-2:2019	Information technology -- Radio frequency identification (RFID) for item management: Data protocol -- Part 2: Registration of RFID data constructs		Published
Numbering	ISO/IEC 15961-3:2019	Information technology -- Radio frequency identification (RFID) for item management: Data protocol -- Part 3: RFID data constructs		Published
Numbering	MDID Assignments	Mask Designer ID (MDID) Assignments	https://www.gs1.org/epcglobal/standards/mdid	Living document
Others	ISO/IEC 19762:2016	Information technology -- Automatic identification and data capture (AIDC) techniques -- Harmonized vocabulary		Published
Others	ISO/IEC 29160:2020	Information technology -- Radio frequency identification for item management -- RFID Emblem		Published
Others	EN 16570:2014	Information technology - Notification of RFID - The information sign and additional information to be provided by operators of RFID application systems		Published
Others	EN 16571:2014	Information technology - RFID privacy impact assessment process		Published
Others	ISO Registration authorities	Maintenance agencies and registration authorities	https://www.iso.org/maintenance_agencies.html	Coninous Maintenance Version
Others	MH10 Data Identifiers	MH10 Data Identifiers	https://www.mhi.org/standards/di	Coninous Maintenance Version
Performance	GS1 EPC STM	GS1 EPCglobal static test method, V1.1.3, 2008-06		Published
Performance	GS1 EPC TIPP	GS1 EPC Tagged-Item Performance Protocol (TIPP) Tagged-Item Grading: Testing Methodology Guideline, V1.0, 2017-07	https://www.gs1.org/sites/default/files/docs/epc/Tagged_Item_Test_Methodology.pdf	Published
Performance	GS1 EPC TIPP	GS1 EPC Tagged-Item Performance Protocol (TIPP) Tagged-Item Grading: Test Configuration Guideline, V1.1, 2017-07	https://www.gs1.org/sites/default/files/docs/epc/Tagged_Item_Test_Configuration.pdf	Published
Performance	GS1 EPC TIPP	GS1 EPC Tagged-Item Performance Protocol (TIPP) Tagged-Item Grading: Grade Definitions Guideline, V1.1, 2017-11	https://www.gs1.org/sites/default/files/docs/epc/Tagged_Item_Grading_Definitions.pdf	Published
Performance	ISO/IEC 18046-1:2011	Information technology -- Radio frequency identification device performance test methods -- Part 1: Test methods for system performance		Published
Performance	ISO/IEC 18046-2:2020	Information technology -- Radio frequency identification device performance test methods -- Part 2: Test methods for interrogator performance		Published
Performance	ISO/IEC 18046-3:2020	Information technology -- Radio frequency identification device performance test methods -- Part 3: Test methods for tag performance		Published
Performance	ISO/IEC 21277:2018	Information technology -- Radio frequency identification device performance test methods -- Crypto		Published
Performance	ISO/IEC 23200-1:2021	Information technology — Radio frequency identification for item management — Part 1: Interference rejection performance test method between a tag as defined in ISO/IEC 18000-63 and a heterogeneous wireless system		Published

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Category	Number/Name	Title	URL	Status
Performance	ISO/IEC 23200-2	Information technology — Radio frequency identification for item management — Part 2: Interference rejection performance test method between an Interrogator as defined in ISO/IEC 18000-63 and a heterogeneous wireless system		Development
Regulations	ETSI EN 302 208 V3.3.1:2020	Radio Frequency Identification Equipment operating in the band 865 MHz to 868 MHz with power levels up to 2 W and in the band 915 MHz to 921 MHz with power levels up to 4 W; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU		Revision
Regulations	FCC Part 15	Electronic Code of Federal Regulations, Title 47: Telecommunication, PART 15—RADIO FREQUENCY DEVICES	https://www.ecfr.gov/current/title-47/chapter-1/subchapter-A/part-15	Published
Regulations	GS1 Overview	Overview of UHF frequency allocations for RAIN RFID	https://www.gs1.org/docs/epc/uhf_regulations.pdf	Living document
Regulations	ISO/IEC TR 20017:2011	Information technology -- Radio frequency identification for item management -- Electromagnetic interference impact of ISO/IEC 18000 interrogator emitters on implantable pacemakers and implantable cardioverter defibrillators		Published
Sensor functionality	ISO/IEC/IEEE 21450:2010	Information technology -- Smart transducer interface for sensors and actuators -- Common functions, communication protocols, and Transducer Electronic Data Sheet (TEDS) formats		Published
Sensor functionality	ISO/IEC/IEEE 21451-1:2010	Information technology -- Smart transducer interface for sensors and actuators -- Part 1: Network Capable Application Processor (NCAP) information model		Published
Sensor functionality	ISO/IEC/IEEE 21451-2:2010	Information technology -- Smart transducer interface for sensors and actuators -- Part 2: Transducer to microprocessor communication protocols and Transducer Electronic Data Sheet		Published
Sensor functionality	ISO/IEC/IEEE 21451-4:2010	Information technology -- Smart transducer interface for sensors and actuators -- Part 4: Mixed-mode communication protocols and Transducer Electronic Data Sheet (TEDS) formats		Published
Sensor functionality	ISO/IEC/IEEE 21451-7:2011	Information technology -- Smart transducer interface for sensors and actuators -- Part 7: Transducer to radio frequency identification (RFID) systems communication protocols and Transducer Electronic Data Sheet (TEDS) formats		Published

ABOUT RAIN RFID ALLIANCE

The RAIN RFID Alliance is an organization supporting the universal adoption of RAIN UHF RFID technology. A wireless technology that connects billions of everyday items to the internet, enabling businesses and consumers to identify, locate, authenticate, and engage each item. The technology is based on the EPC Gen2 UHF RFID specification, incorporated into the ISO/IEC 18000-63 standard.

Join the RAIN RFID Alliance to enable connectivity for your business and consumers: identify, locate, authenticate, and engage items in our everyday world. For more information, visit www.RAINRFID.org.



RAIN RFID Alliance

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