



GS1 EPCglobal Glossary

Terms and terminology within the GS1 EPCglobal standards

<i>Terminology</i>	<i>Abbreviation</i>	<i>Description</i>
A		
Access Control API		One of five Application Programming Interfaces (APIs) provided by the Application Level Events (ALE) standards. The Access Control API is an interface through which authorized clients may define the access rights of other clients to use the facilities provided by the other APIs.
Action Groups	AG's	In <i>EPCglobal</i> , Action Groups provide the business and technical perspective to support the Standards Development Process. <i>Business Action Groups</i> identify business needs, gather business requirements, and develop consensus on best practices. The <i>Software</i> and <i>Hardware Action Groups</i> develop technical standards, based on business requirements.
Active Tag		RFID device having the ability of producing its own radio signal not derived from an external radio signal. To generate a radio signal active tags must employ some source of power. Traditionally this has been accomplished by integrated batteries, although designs exist for such devices that employ solar power or harvest ambient energy from the surrounding environment.
Addressability		The ability to write data to different fields, or blocks of memory, in the microchip in an RFID transponder.
Advance Ship Notice	ASN	See <i>Despatch Advice</i>

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Adverse Environment		Conditions beyond the limits of normal use, such as extremes of temperature, humidity, dust, vibration etc.
AFI	AFI	See <i>Application Family Identifier</i>
Agile Reader		A generic term that usual refers to an RFID reader that can read tags operating at different frequencies or using different methods of communication between the tags and readers.
AIM International	AIM	An international organization whose mission is to grow a worldwide market for <i>Automatic Identification and Data Capture (AIDC)</i> products and services through concerted action to set international standards, increase global awareness of AIDC solutions, and identify and educate current and potential new users on effective application of the technology.
Air Interface Protocol	AIP	The complete communication link between a Reader and a Tag, including the physical layer, collision arbitration algorithm, command and response structure, and data-coding methodology.
ALE	ALE	See <i>Application Level Events</i>
Anonymising		Removing, obscuring, or otherwise preventing unauthorized access to a Tag's uniquely identifying information.
Antenna		The conductive element that enables a RFID tag or reader to send and receive data via radio frequency.
Antenna Gain		In technical terms, the gain is the ratio of the power required at the input of a loss-free reference antenna to the power supplied to the input of the given antenna to produce, in a given direction, the same field strength at the same distance. Antenna gain is usually expressed in decibels and the higher the gain the more powerful the energy output. Antennas with higher gain will be able to read tags from farther away.
Anti-Collision	AC	See <i>simultaneous ID</i> .
Application Family Identifier	AFI	An International Organization for Standardization (ISO) method for classifying <i>Radio Frequency Identification (RFID)</i> by application. This method enables a single air interface protocol to be used across multiple applications, such as supply chain and identity cases.

Terminology	Abbreviation	Description
Application Level Events	ALE	An EPCglobal standard that defines interfaces through which clients may interact with filtered, consolidated EPC data and related data from a variety of sources. The role of the ALE interface within the EPCglobal Architecture Framework is to provide independence between the infrastructure components that acquire the raw EPC data, the architectural component(s) that filter & count that data, and the applications that use the data.
Application Programming Interface	API	A set of routines, data structures, object classes and/or protocols provided by libraries and/or operating system services in order to support the building of applications.
Application Standards		Rules for producing and applying technical standards to specific business problems. Examples: The framework for implementing the EPCglobal Network in a sector or guidelines for the physical application of tags to products.
Architecture Review Committee	ARC	An EPCglobal standing committee reporting to the EPCglobal Inc President that helps to evaluate and prioritize requirements affecting the overall EPCglobal Architecture Framework. This committee may also serve as a technical resource to the EPCglobal Board of Governors. The ARC has responsibility for the creation, documentation, and maintenance of the EPCglobal Architecture Framework.
As-Is Model		Representation of a current business process.
ASK	ASK	See <i>Amplitude shift keying</i>
Authentication		The process of verifying an identity claimed by or for a system entity.
Auto-ID Center	AIC	The Auto-ID Center officially closed on October 31, 2003. Its work in developing Electronic Product Code technologies was transferred to EPCglobal Inc per the EPCglobal Joint Venture contract. See <i>Auto-ID Labs</i> .
Auto-ID Labs	AIL	Academic entity headquartered at Massachusetts Institute of Technology (MIT) chartered to research and develop <i>EPC</i> technologies and applications originally, along with five other research universities around the world: the University of Cambridge in the United Kingdom; the University of Adelaide in Australia; Keio University in Tokyo, Japan; Fudan University in Shanghai, China; and the University of St. Gallen in Switzerland. See www.autoidlabs.org for additional information including updates to the labs and their progress.



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Automatic Identification & Data Capture	AIDC	Technology associated with the creation and acquisition of machine-readable data. The primary technologies are bar codes and <i>Radio Frequency Identification (RFID)</i> .
B		
Backscatter		A method of communication between passive tags (ones that do not use batteries to broadcast a signal) and readers. RFID tags using backscatter technology reflect back to the reader radio waves from a reader, usually at the same carrier frequency. The reflected signal is modulated to transmit data.
Backward Compatibility		The ability to continue to operate in compliance with a prior version of the standard while also being in compliance with the new version
Backward Orthogonality		A system that neither interferes with, nor responds to, commands or signalling used in existing standardized RFID systems.
Bar Code		A standard method of identifying the manufacturer and product category of a particular item. The bar code was adopted in the 1970s because the bars were easier for machines to read than optical characters. Unlike RFID tags, direct line of sight is required to read bar codes.
Battery Life - Actual		Period that battery actually continuously operates to specification
Battery Life - Expected		Period that a battery is expected to be able to continuously perform to normal operating specification
Battery-Assisted Passive Tag	BAT	An RFID device whose transceiver is powered by the RF field and uses a battery to improve its functionality and range.
Beacon tag	BT	An active tag that transmits only
Business Steering Committee	BSC	An EPCglobal steering committee for all Industry Action Group co-chairs, which identifies and addresses cross-Industry Action Group synergies or conflicts such as priorities, resourcing, or content/deliverables.
C		
Calibration Point		A method of calculating location based on differences in reception time at multiple receivers.

Terminology	Abbreviation	Description
Candidate Specification	CS	The result of taking a Last Call Working Draft, putting it out for comment, and then resolving all of the comments. Once deemed a Candidate Specification, the specification is deemed to be “technically stable” enough to support use for prototypes and intellectual property declarations.
Carrier Frequency	CF	The main frequency of a transmitter, or RFID reader, such as 915 MHz. The frequency is then changed, or modulated, to transmit information.
Catalogue Item	CI	The representation of a trade item as it is stored in a catalogue for the data synchronization process. The catalogue item is uniquely identified by a <i>Global Trade Item Number® (GTIN®)</i> + <i>Global Location Number (GLN)</i> + Target Market combination (commonly referred to as a key).
Certification		The process of conveying a mark of standards compliance from an authority to vendor products that conform to pre-determined standards, performance levels and/or interoperability testing. Certification also includes the rules for using and maintaining the mark, as well as the information that the mark communicates.
Checksum		A code added to the contents of a block of data stored on an RFID microchip that can be checked before and after data is transmitted from the tag to the reader to determine whether the data has been corrupted or lost. The cyclic redundancy check is one form of checksum
Choke Point		Physical location where business process results in tag being moved through a pre-determined area which is within the field of one or more readers whose location(s) is known. Typically used to detect that objects have moved from one business location or process to another
Circular Polarized Antenna		A UHF reader antenna that emits radio waves in a circular pattern. These antennas are used in situations where the orientation of the tag to the reader cannot be controlled. Since the waves are moving in a circular pattern, they have a better chance of hitting the antenna, but circular-polarized antennas have a shorter read range than linear-polarized antennas.
Closed Loop System		An application whose domain is confined to a single company; for example, an RFID application for tracking forklifts that only operate within a single company's facilities.
Command Set		The set of commands a Reader uses to explore and modify a Tag population



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Compliance Testing		Testing done to judge a hardware or software product's compliance to a particular standard. This is generally a pass/fail test, which also provides guidance if a product fails to comply.
Conformance		The ability to demonstrate in an unambiguous way that a given implementation is correct with respect to the formal model.
Conformance Testing		See <i>compliance testing</i>
Coupling		See inductive coupling
D		
Data Alignment		The one-time synchronous exchange of data between trading partners (e.g., names, addresses, agreements, item information, price lists, or locations).
Data Field		An area of memory on an RFID microchips that is assigned to a particular type of information. Data fields may be protected (see below) or they may be written over, so a data field might contain information about where an item should be sent to. When the destination changes, the new information is written to the data field.
Data Pool		A repository of data where trading partners can obtain, maintain and exchange information on items and parties in a standard format through electronic means.
Data Protection		The ability to ensure that data is protected against unauthorized access and/or use.
Data Synchronization		The process of continuous harmonisation of information between all trading partners ensures that the master data is the same in all trading partners systems. This process uses the EAN.UCC standards developed by the Align Data BRG.
Data Transfer Rate	T/R	The number of characters that can be transferred from an RFID tag to a reader within a given time. Baud rates are also used to quantify how fast readers can read the information on the RFID tag. This differs from read rate, which refers to how many tags can be read within a given period of time.

Terminology	Abbreviation	Description
Deactivation		The process of legitimizing an item passing a PoE (Point of Entry) without sounding or activating an alarm
Dense Reader Mode	DRM	See <i>Multiple-Interrogator Environment</i>
Despatch Advice		An <i>Electronic Data Interchange (EDI)</i> transaction that provides the receiving company with advance data on shipments to better plan workloads and receipt processing. In the implementation of the transaction, the latest the ship notice may be sent is the time of shipment. In practice, the ship notice must arrive before the shipment.
De-tune		UHF antennas are tuned to receive RFID waves of a certain length from a reader, just as the tuner on the radio in a car changes the antenna to receive signals of different frequencies. When UHF antenna is close to metal or metallic material, the antenna can be detuned, resulting in poor performance.
Die		The silicon block upon which circuits have been etched.
Discovery Services	DS	A component of the EPCglobal Architecture Framework consisting of a suite of services that enable users to find data held by individual companies related to a specific Electronic Product Code. Object Naming Service is one component of Discovery Services.
Discussion Group	DG	An EPCglobal process designed to engage industries not already served within the standards development community. A Discussion Group is the preliminary step to determine the need for an Industry Action Group.
Distribution Center	DC	A location where products are received and then shipped to other sites.
Duty Cycle		The fraction of time the reader can be emitting energy.
E		
EAS-enabled RFID		Incorporating EAS functionality into an RFID system
EAS-enabled Tag		A Tag that includes features supporting Electronic Article Surveillance applications.



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Effective Isotropic Radiated Power	EIRP	A measurement of the output of RFID reader antennas used in the United States and elsewhere. EIRP is usually expressed in watts.
Effective Radiated Power	ERP	A measurement of the output of RFID reader antennas used in Europe and elsewhere. ERP is usually expressed in watts and is not the same as EIRP.
Electrically Erasable Programmable Read-Only Memory	EEPROM	A method of storing data on microchips in which the memory contents are retained when power is removed, and where the data may be rewritten or changed multiple times.
Electromagnetic Interference	EMI	Interference caused when radio waves emitted by a device degrade the performance of another device. For example, signals for devices operating in the same frequency band as RFID tags may reduce the ability to read those tags.
Electronic Article Surveillance	EAS	Simple electronic tags that can be turned on or off. When an item is purchased (or borrowed from a library), the tag is turned off. When someone passes a gate area holding an item with a tag that hasn't been turned off, an alarm sounds. They can be RF-based, or acousto-magnetic
Electronic Data Interchange	EDI	A standard format for computer-to-computer transmission of business information and transactions between trading partners, such as invoices and purchase orders.
Electronic Product Code™	EPC	An identification scheme for the universal identification physical objects via RFID tags and other means. An EPC construct consists of an EPC Manager Number, an object class identification, and a serial number used to uniquely identify the instance of the object.
Encryption		A process that uses a mathematical algorithm and a key to transform data into a form (called ciphertext) that cannot be understood in the absence of the key. A receiver can use the key, or a related key, to restore the data to its original format.
End-User		A company or other entity that uses EPCglobal standards and services.
EPCIS Capturing Application		A software application that supervises an operational process step in which physical objects are handled, and creates a record of the completion of the step in the form of an EPCIS event. An EPCIS Capturing Application typically interacts with RFID tags and other data carriers.

Terminology	Abbreviation	Description
EPC Discovery Service(s)		See Discovery Services
EPC Implementation Advisor™		A new implementation tool created by EPCglobal North America and the Electronic Product Code Implementation Program that allows users to connect and begin sharing EPC information with their trading partners in the most efficient manner. This tool is designed to step the user through the four phases of Electronic Product Code/Radio Frequency Identification implementation: 1) Getting Started, 2) Financial Planning, 3) Internal Implementation Planning, and 4) Vendor Selection.
EPC Information Services	EPCIS	A standard for the exchange of physical visibility data based on the electronic product code. The EPCIS standard defines a schema for physical visibility data, and interfaces for the capture and query of this data.
EPC Manager Number		A unique number issued to an end user that enables the end user to create globally unique electronic product codes.
EPC Reader		An <i>RFID</i> reader that complies with <i>EPCglobal Standards</i> .
EPC Tag		An <i>RFID</i> tag that complies with <i>EPCglobal Standards</i> containing an <i>Electronic Product Code™ (EPC)</i> .
EPCglobal Architecture Framework		The collective term for all EPCglobal standards and services. Also the title of the document that summarizes all such standards and services.
EPCglobal™ Application		An application whose usage denotes an acceptance of EPCglobal™ standards and policies (see non-EPCglobal™ Application)
EPCglobal Inc™		A joint venture between GS1 and GS1 US. EPCglobal is a neutral, not-for-profit organization entrusted by industry to establish and support the Electronic Product Code and the global adoption of the EPCglobal Network.
EPCglobal Inc™ Board of Governors	BoG	The governing body for EPCglobal Inc, made up of representatives from GS1 US, GS1, end-users, and the Auto-ID Labs.



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<i>Terminology</i>	<i>Abbreviation</i>	<i>Description</i>
EPCglobal Network®		The EPCglobal Network is a community of trading partners engaged in the capture, sharing and discovery of Electronic Product Code-related data using EPCglobal-certified hardware and software components and standard interfaces.
EPCglobal Standard		A ratified specification that, after extensive consensus-building within the EPCglobal Action Groups, has received the endorsement of <i>EPCglobal Subscribers</i> and the <i>EPCglobal Board of Governors</i> .
EPCIS Accessing Application		A software application that receives EPCIS data from EPCIS Capturing Applications, either directly or via the EPCIS Query Interface, and processes those data to carry out a business objective.
EPCIS Capture Interface		Provides a path for communicating EPCIS events generated by EPCIS Capturing Applications to other roles that require them, including EPCIS Repositories, internal EPCIS Accessing Applications, and Partner EPCIS Accessing Applications.
EPCIS Query Interface		Provides a means whereby an EPCIS Accessing Application can request EPCIS data from an EPCIS Repository or an EPCIS Capturing Application, and the means by which the result is returned.
EPCIS Repository		Records EPCIS-level events generated by one or more EPCIS Capturing Applications, and makes them available for later query by EPCIS Accessing Applications.
Excite		The reader is said to "excite" a passive tag when the reader transmits RF energy to wake up the tag and enable it to communicate back.
eXtensible Markup Language	XML	A widely used standard from the World Wide Web Consortium (W3C) that facilitates the interchange of data between computer applications. XML is similar to the language used for Web pages, the Hypertext Markup Language (HTML), in that both use markup codes (tags). XML allows the developers create customized tags that offer greater flexibility in organizing and presenting information than is possible with HTML.
F		
Factory Programming		The process of writing an Electronic Product Code identification number into a chip at the time the chip is manufactured. This is required for some radio frequency identification read-only tags. See field programming.

Terminology	Abbreviation	Description
Far Field Communication		Radio communication between an RFID reader and a tag that relies on electromagnetic wave radiation, rather than on inductive coupling between reader and tag (see "near field communication"). The far field signal decays as the square of the distance from the antenna, while the near field signal decays as the cube of distance from the antenna. So passive RFID systems that rely on far field communications have a longer read range than those that use near field communications.
Field		A zone of radio frequency energy created by a reader and associated antenna(s).
Field (Radio)		When an RF current is supplied to an antenna, it gives rise to an electromagnetic field that propagates through space.
Field (RFID)		Although strictly speaking identical to Field Radio, this term is often used to refer to the area of electromagnetic field within which successful RFID communications are possible between tag and reader.
Field Programming		Programming done outside of the factory, after an <i>RFID tag</i> has shipped. This can be done on RFID tags that use <i>Electrically Erasable Programmable Read-Only Memory (EEPROM)</i> . See also factory programming.
Foreign Tag		A Tag not associated with an item owned by a store or facility but which is nonetheless entering, leaving, or otherwise in the proximity of the store or facility and readable by RFID Readers located in the store or facility
Frequency		The number of repetitions of a complete wave within one second. 1 Hz equals one complete waveform in one second. 1KHz equals 1,000 waves in a second. RFID tags use low,high, ultra-high and microwave frequencies. Each frequency has advantages and disadvantages that make them more suitable for some applications than for others.
Frequency Hopping		A technique used to prevent readers from interfering with one another. In the United States, UHF RFID readers actually operate between 902 and 928 MHz, even though it is said that they operate at 915 MHz. The readers may jump randomly or in a programmed sequence to any frequency between 902 MHz and 928 MHz. If the band is wide enough, the chances of two readers operating at exactly the same frequency is small. The UHF bands in Europe and Japan are much smaller so this technique is not effective for preventing reader interference.



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G		
Gen2		The EPCglobal Class-1 Generation-2 UHF RFID Protocol for Communications at 860 MHz – 960 MHz
Global Data Synchronization Network	GDSN	The GDSN is an Internet-based, interconnected network of interoperable data pools and a Global Registry, the GS1 Global Registry, that enables companies around the world to exchange standardised and synchronised supply chain data with their trading partners.
Global Location Number	GLN	The GS1 Identification Key used to identify physical locations or legal entities. The key comprises a GS1 Company Prefix, Location Reference, and Check Digit. The EPC form of a GLN is only used to identify physical locations.
Global Standards Management Process	GSMP	GS1 created the Global Standards Management Process (GSMP) to support standards development activity for the GS1 System. The GSMP uses a global consensus process to develop supply chain standards that are based on business needs and user-input.
Global Trade Item Number	GTIN	The GS1 Identification Key used to identify trade items. The key comprises a GS1 Company Prefix followed by an Item Reference Number and a Check Digit.
GPI	GPI	General purpose input
GPO	GPO	General purpose output
GS1	GS1	GS1 is a leading global organisation dedicated to the design and implementation of global standards and solutions to improve the efficiency and visibility of supply and demand chains globally and across sectors. The GS1 system of standards is the most widely used supply chain standards system in the world.
GS1 Member Organisation		A member of GS1 that is responsible for administering the GS1 System in its country (or assigned area). This task includes, but is not restricted to, ensuring user companies make correct use of the GS1 System, have access to education, training, promotion and implementation support and have access to play an active role in GSMP.

<i>Terminology</i>	<i>Abbreviation</i>	<i>Description</i>
H		
Hardware Action Group	HAG	An EPCglobal Action Group that develops specifications for element and interface standards for key hardware components of the EPCglobal Network, including readers and tags. There is one Hardware Action Group to define global standards across all industries.
Harvesting		A term sometimes used to describe the way passive tags gather energy from an RFID reader antenna. High-frequency: From 3 MHz to 30 MHz. HF RFID tags typically operate at 13.56 MHz. They typically can be read from less than 3 feet away and transmit data faster than low-frequency tags. But they consume more power than low-frequency tags.
Header		Identifies the structure of an Electronic Product Code™ (EPC), when encoded in binary on an RFID tag.
HF Tags		<i>RFID tags</i> that operate at 13.56MHz.
High Frequency	HF	Radio Spectrum at 13.56MHz.
Human Readable Interpretation	HRI	Characters, such as letters and numbers that can be read by people, as opposed to symbol characters within bar codes or electronic data within tags, which are read by machines.
I		
Identification Number	ID	A numeric or alphanumeric designation that uniquely identifies an object in the supply chain. Identification numbers are used to retrieve information associated with objects in the supply chain..
Inductive Coupling		A method of communicating data between tags and readers in which information is carried through changes in the magnetic field created by the reader's antenna.
Industrial, Scientific, & Medical Bands	ISM	A group of unlicensed frequencies of the electromagnetic spectrum.



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Industry Action Group	IAG	Within the EPCglobal community, Industry Action Groups are charged with providing end-user business requirements to the EPCglobal Inc standards development process and with driving adoption of the EPCglobal Network. Industry Action Groups are formed as industries increase the adoption of Electronic Product Code/Radio Frequency Identification technology and increase their involvement in the standards development process. Retail Supply Chain, Healthcare and Life Sciences, and Transportation and Logistics Services are current Industry Action Groups.
Inlay		An RFID microchip attached to an antenna and mounted on a substrate. Inlays are essentially unfinished RFID labels. They are usually sold to label converters who turn them into smart labels.
General Purpose Input/Output	GPIO	Ports on a reader provided for interaction with hardware peripheral to the reader itself. For example, a device such as an electronic eye may be connected to a general purpose input (GPI) port so that when an object breaks the beam of the electronic eye the reader begins reading. As another example, an actuator device may be connected to a general purpose output port (GPO) so that when a tag is read, a conveyor is turned on or a dock door opened.
Integrated Circuit	IC	A microelectronic semiconductor device consisting of several interconnected transistors and other components. IC's are integrated into most <i>RFID tags</i> .
Interest Group	IG	For EPCglobal, Interest Groups focus on specific deliverables and topics for an industry as input into Joint Requirements Group.
Interference – Reader To Reader		Reader-to-Reader interference happens when a Reader in the midst of listening to a tag's reply at a particular frequency, receives signals much stronger than the tag's reply, from another Reader operating at the same frequency at the same time. This causes the Reader's receiver logic to not be able to correctly decode the tag's reply.
Interference – Reader To Tag		Reader-to-tag interference happens when a tag receives signals of comparable strengths from more than one Reader at the same time. This causes the tag to respond arbitrarily to the Readers, and makes its state unpredictable.

Terminology	Abbreviation	Description
International Organization for Standardization	ISO	Worldwide federation of national standards bodies promoting the development of standardization, whose work results in the publication of international standards.
Interoperability		Guarantee of a certain level of compatibility between different implementations of the same standard.
Interoperability Testing		Testing done against industry-accepted standards with varying combinations of hardware or software products to ensure that the product interoperates with other products.
Interrogator		An RFID reader
Inventory (Business)		A collection of products, materials, or other physical assets owned by a commercial entity.
Inventory (RFID)		The process by which a Reader singulates a Tag and receives the Tag's EPC.
Inventory Reliability		The number of Tags a Reader correctly singulates in an environment, divided by the total number of Tags in the environment.
Inventory Round		A single cycle of the algorithm by which a Reader attempts to singulate the Tags within its environment. In the Gen 2 air interface protocol, this is the period initiated by a <i>Query</i> command and terminated by either a subsequent <i>Query</i> command (which also starts a new inventory round) or a <i>Select</i> command.
Item (Commercial)		An individual discrete physical object
Item (Retail)		The lowest level of the packaging hierarchy intended or labeled for individual retail sale.
J		
Joint Requirements Group	JRG	An EPCglobal Working Group created from participants of Industry Action Groups and Technical Action Groups to produce requirements for specifications.

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K		
Kill		Rendering a singulated Tag permanently nonresponsive
L		
Last Call Working Draft	LCWD	The first state of an EPCglobal hardware or software specification as it moves through the development process on its way to becoming a ratified EPCglobal standard. A Last Call Working Draft has been deemed by the Working Group to meet the requirements of the Working Group's charter, and is presented to the Hardware Action Group or Software Action Group for community review and comment.
License Plate	LP	License Plate [spelling] An RFID tag or other data carrier that contains a unique identifier for the physical object to which it is affixed, and no other business information. Other business information must be associated with the license plate identifier through an external database or other means.
Linear Polarized Antenna		An antenna whose electromagnetic signals are aligned in a fixed orientation with respect to the direction of signal propagation. Linear polarization concentrates more energy in the direction of orientation, and hence increases read range, but requires that the orientation of the reader antenna and tag antenna be aligned with each other for maximum effectiveness.
LLRP	LLRP	Low Level Reader Protocol
LLRP connection		A network connection between a single LLRP-compliant reader and a single LLRP client, through which the LLRP client controls the reader.
LLRP endpoint		A generic term for either endpoint of an LLRP connection; ie, either an LLRP-compliant reader or an LLRP client.
Local ONS		Fulfills ONS lookup requests for EPCs within the control of the enterprise that operates the Local ONS; that is, EPCs for which the enterprise is the EPC Manager.
Location Resolution		The location accuracy within the defined radius of tag position, usually expressed in metres. This may also be expressed as the maximum magnitude of the error-vector between the true position of the tag and the estimated position of the tag.

<i>Terminology</i>	<i>Abbreviation</i>	<i>Description</i>
Lock		Locking one or more memory areas of a singulated Tag to prevent subsequent reading or writing, as appropriate (see Permalock and Unlock).
Logical Reader API		One of five Application Programming Interfaces (APIs) provided in the Application Level Events (ALE) standard. The Logical Reader API is an interface through which clients may define logical reader names for use with the ALE Reading API and the ALE Writing API, where each logical reader name is an alias for one or more channels provided by the implementation through which Tags are accessed.
Logistics Segment		Transportation from known location to another location by a single specific mode of transport, e.g. conveyance by truck from factory dock to port of departure
Low Frequency	LF	The frequency band between 30 kHz to 300 kHz. Low-frequency RFID tags typical operate at 125 kHz or 134 kHz. The main disadvantages of low-frequency tags are they have to be read from within three feet and the rate of data transfer is slow. But they are less subject to interference than UHF tags.
Low Power State		A state whereby a device reduces power consumption to only that required to return the device to full functionality. See also Sleep Mode.
M		
Manager Number Assignment		The process by which an EPCglobal subscriber obtains a globally unique EPC Manager Number. This process insures that EPCs assigned by the subscriber are themselves globally unique.
Master Data		Within the Context of Data Synchronization, any data or constructs that are applicable across multiple business transactions. Master Data can be divided into neutral and relationship dependent data. Typically Master Data is static - not transactional.
Memory		The part of the microchip in an RFID tag that holds data that can be read and/or written.
Memory Block		The smallest unit of memory on an RFID tag that can be locked independently of other parts of memory.



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Message Transport Binding	MTB	A specific implementation of an abstract interface protocol in terms of message syntax and network transport protocol.
Microwave Tags		A term that is some time used to refer to RFID tags that operate at 5.8 GHz. They have very high transfer rates and can be read from as far as 30 feet away, but they use a lot of power and are expensive.
Minimum Read Distance		The minimum distance between tag and reader in order for a tag to successfully interact with a reader.
Modulation	mod	Changing the radio waves traveling between a reader and a tag in ways that enable the transmission of information. Waves be changed in a variety of ways that can be picked up by the reader and turned into the ones and zeroes of binary code. Waves can be made higher or lower (amplitude modulation) or shifted forward (phase modulation). The frequency can be varied (frequency modulation), or data can be contained in the duration of pulses (pulse-width modulation).
Multiple Access Schemes	MA	Methods of increasing the amount of data that can be transmitted wirelessly within the same frequency spectrum. Some RFID readers use Time Division Multiple Access, or TDMA, meaning they read tags at different times to avoid interfering with one another.
Multiplexer	mux	A component of a reader that allows the reader's radio electronics to interact with more than one antenna, where at each moment in time the reader may electronically select which antenna is connected to the radio. This allows a single reader device to have multiple antennas while sharing the cost of the radio with the limitation that only one antenna may be active at a time.
N		
Near Field Communication	NFC	Radio communication between an RFID reader and a tag that relies on inductive coupling between the reader and tag, rather than on electromagnetic wave radiation (see "far field communication"). The near field signal decays as the cube of distance from the antenna, while the far field signal decays as the square of the distance from the antenna. So RFID systems that rely on near-field communication have a shorter read range than those that use far field communication; typically limited to a range approximately equal to one wavelength.
No Power		A state where no power at all is available for a device. See also Power Off

<i>Terminology</i>	<i>Abbreviation</i>	<i>Description</i>
Noise		Unwanted ambient electrical signals or electromagnetic energy found in the operating environment of RFID equipment. Noise can be caused by other RF devices, robots, electric motors and other machines.
Nominal Range		The read range at which the tag can be read reliably.
Non-EPCglobal™ Application		An application whose usage does not denote an acceptance of EPCglobal™ standards and policies (see EPCglobal™ Application).
Null Spot		Area in the field of a reader that has very low signal compared to adjacent areas, due to cancellation effects. Null spots may act as "blind spots" in which it is difficult or impossible to read tags, despite the tag being within the nominal range of the reader.
O		
Object Class		Term used in an Electronic Product Code structure that extends the EPC Manager Number to identify the category or reference of an object in motion.
Object Name Service (ONS) Root	ONS Root	"The first in a series of hierarchical lookup servers that is consulted when performing a full lookup in the Object Name Service (ONS). Because higher-level lookups are cached by ONS clients, in practice many ONS lookups are completed without the need to consult the ONS Root."
Object Naming Service	ONS	A directory based on the worldwide Internet Domain Name System (DNS). ONS provides a means to look up pointers to information resources for an Electronic Product Code (EPC), where those pointers are registered by the company or entity responsible for creating (commissioning) the EPC. Typically ONS only refers to information resources operated by the commissioning company, and not resources operated by other supply chain participants who may have information about a given EPC (see Discovery Services). ONS does not contain actual data about the EPC; it only contains the network address where data resides, for example, a Uniform Resource Locator (URL) that refers to an EPC Information Services (EPCIS) service operated by the company that commissioned the EPC.
One Time Programmable Tag	OTP	Also called a field-programmable tag. An RFID tag that can be written to once and read many times (see WORM).



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<i>Terminology</i>	<i>Abbreviation</i>	<i>Description</i>
Operating Procedure (Business)		Set of specific processes carried out under specific business rules
Operating Range		The distance between a reader antenna and tag over which a tag can communicate with a reader.
Orientation		The position of a tag antenna vis-a-vis a reader antenna. With UHF systems, readers can be either circular-polarized or linear-polarized. When using a linear polarized antenna, the tag reader and antenna reader must be in alignment in order to achieve the longest reading distance. If that tag antenna is aligned vertically and the reader is sending out signals horizontally, only a small portion of the energy emitted by the reader will be received by the tag antenna.
P		
Passive Tag (or Passive Label)		A Tag whose microchip is powered by the RF field created by the Reader.
Patch Antenna		A small square reader antenna made from a solid piece of metal or foil.
Protocol Control Bits	PC Bits	Information in the EPC memory of a Gen 2 tag that controls the process of reading the tag. The PC bits include a CRC checksum, a length indicator, and other information.
Penetration		The ability of a particular radio frequency to pass through non-metallic materials. Low-frequency systems have better penetration than UHF systems.
Performance Testing		See <i>Simulated Performance Testing and Tagged Unit Performance Testing</i> .
Permalock or Permalocked		A memory location whose lock status is unchangeable (i.e. the memory location is permanently locked or permanently unlocked) is said to be permalocked.
Persistent Memory or Persistent Flag		A memory or flag value whose state is maintained during a brief loss of Tag power.
Phantom Read		Also called a phantom transaction or false read. When a reader reports the presence of a tag that doesn't exist.

Terminology	Abbreviation	Description
Phase Jitter Modulation	PJM	A modulation method whereby a data stream is modulated onto the carrier of the interrogator by varying the phase of the interrogator carrier by a small amount (typically in the range of +/- 1 to +/- 6 degrees).
Physical Layer		The data coding and modulation waveforms used in Interrogator-to-Tag and Tag-to-Interrogator signaling.
PIE	PIE	Pulse-interval encoding
Plaintext		Information that is not encrypted
Point-of-Entry or Point-of-Exit	PoE	Collectively, the entry or exit locations into or out of a store or facility.
Point-of-Sale	POS	A location within a store or facility where an object is sold and may be marked or otherwise indicated as being allowed to legitimately leave the store or facility.
Power Level		The amount of radio frequency energy radiated from a RFID reader or an active tag. The higher the power level, the longer the read range. Power levels are regulated by most governments to prevent interference with other devices.
Power Off State		State where no power at all is provided to the Active Tag from any source.
ppm	ppm	Parts-per-million
PR-ASK	PR-ASK	Phase-reversal amplitude shift keying
Programming a tag		The act of writing or embedding data onto a RFID tag.
Proximity Sensor		A device that detects the presence of an object and signals another device. Proximity sensors are often used on manufacturing lines to alert robots or routing devices on a conveyor to the presence of an object. They can be used in RFID systems to turn on readers.
PSK	PSK	Phase shift keying or phase shift keyed

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<i>Terminology</i>	<i>Abbreviation</i>	<i>Description</i>
Public Policy Steering Committee	PPSC	A global multi-industry group within EPCglobal including retailers, manufacturers, and trade associations that provides outreach, dialog, and counsel to key stakeholders within the EPCglobal community on public policy issues such as privacy and environmental concerns.
Q		
Q	Q	In the Gen 2 air interface protocol, Q is a parameter that a Reader uses to regulate the probability of Tag response. A Reader commands Tags in an inventory round to choose a random number between zero and 2^Q ; a tag may be successfully singulated if no other Tags choose the same random number (a "collision"). Larger Q values decrease the probability of collision, but require the Reader to spend more time during singulation.
Q algorithm		A collision-arbitration algorithm where Tags load a random (or pseudo-random) number into a slot counter, decrement this slot counter based on Reader commands, and reply to the Reader when their slot counter reaches zero.
R		
R=>T	R=>T	Interrogator-to-Tag
Radio Frequency	RF	Any frequency within the electromagnetic spectrum associated with radio wave propagation. When a radio frequency current is supplied to an antenna, an electromagnetic field is created and can propagate through space. Many wireless technologies are based on radio frequency field propagation.
Radio Frequency Identification	RFID	A method of automated identification using electronic tags capable of receiving/storing and/or transmitting digital information by means of, and in response to, RF energy.
Random-Slotted Collision Arbitration		See Q algorithm.
Read		Reading one or more data words from one or more memory areas of a singulated Tag.
Read Accuracy		The ratio of 100% accurate reads of all successful tag reads

Terminology	Abbreviation	Description
Read Lock		Locking one or more of a Tag's memory areas so that a subsequent reader is required to exchange appropriate security safeguards with the Tag before being able to read these memory areas
Read-Only Tags		RFID tags containing data that cannot be changed
Read Range		The maximum distance at which a reader can send data to or receive data from a RFID tag. The read range of a tag can be affected by the frequency, antenna design, method of powering, and other factors.
Read Rate		The rate at which data can be read from an <i>RFID tag</i> ; represented in bits or bytes per second.
Read Reliability		The ratio of successful attempts to read a tag to all attempts to read a tag, under specified operating parameters of the tag & reader combination
Read-Write Tag		RFID tags whose memory contents may be altered multiple times by a reader.
Reader		A device that communicates with RFID tags. Readers encode commands to send to tags, and decode responses from the tags. Readers communicate with tags by modulating the encoded commands on to waveforms to send to tags and by demodulating the replies from waveforms that the reader receives back from the tags. Readers send the decoded tag responses to software systems, typically for subsequent business analysis. Readers and interrogators are the same thing.
Reader Field		The area within which a RFID tag can receive radio waves and can be read.
Reader Protocol	RP	A network protocol whereby a software application may interact with a Reader device. Also refers to the EPCglobal Reader Protocol 1.1 standard, which is a specific example of the more general definition. The EPCglobal Reader Protocol 1.1 standard is largely obsolete by the EPCglobal Low Level Reader Protocol (q.v.)
Reader Synchronization		Timing readers or reader antennas near one another so that they don't interfere with one another.
Reader Talks First	RTF	A system in which a Tag responds with an information signal only after being directed to do so by a Reader



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<i>Terminology</i>	<i>Abbreviation</i>	<i>Description</i>
Reading API		One of five Application Programming Interfaces (APIs) provided in the Application Level Events (ALE) standard. The Reading API is an interface through which clients may obtain filtered, consolidated EPC and other data from a variety of sources. In particular, clients may read RFID tags using RFID readers.
Real Time Locating System	RTLS	A system of hardware and software elements used to continuously determine and report the physical position of assets and resources, where the latter are equipped with devices designed to operate with the system at a level of responsiveness sufficient for the application.
Receive Sensitivity		A measure of the weakest tag signal an RFID reader is able to detect and demodulate.
Recommissioning		A significant altering of a Tag's functionality and/or memory contents, as commanded by a Reader, typically in response to a change in the Tag's usage model or purpose.
Resolution		See Location Resolution
Retail Supply Chain Industry Action Group	RSC IAG	An EPCglobal Industry Action Group that provides a forum for the interaction of end-users and solution providers to collaborate on the definition of user requirements for EPCglobal standards and the understanding of solutions to those requirements. This group focuses on the issues and processes identified within the retail industry.
RF	RF	Radio frequency
RFID	RFID	Radio-frequency identification
RFID Reader		An <i>RFID reader</i> communicates via radio waves with <i>RFID tags</i> and delivers the information in a digital format to a computer system. Also known as an interrogator or a reader.
RFID Tag		A microchip attached to an antenna that sends data to an <i>RFID reader</i> .
RFU	RFU	Reserved for future use
RN16	RN16	16-bit random or pseudo-random number
RNG	RNG	Random or pseudo-random number generator

Terminology	Abbreviation	Description
Ruggedised - Environment		Built to operate in adverse environment
Ruggedised - Handling		Built to withstand abnormal handling, physical shock, drop etc.
S		
Select		The operation of choosing a tag population for inventory and access. A Select command may be applied successively to select a particular Tag population based on user-specified criteria.
Semi-Passive Tags		A class of <i>RFID tags</i> that contain a power source, such as a battery, to power the microchip's circuitry. Unlike active tags, semi-passive tags do not use the battery to communicate with the reader. Some semi-passive tags are dormant until activated by a signal from a reader. This conserves battery power and can lengthen the life of the tag.
Sensor		Device that is capable of capturing data about one or more aspects of its environment, such as acceleration, temperature, humidity, shock etc.
Sensor Link		Interface between sensor and another device such as an RFID reader
Serial Number	SN	A code, numeric or alphanumeric, assigned to an individual instance of an entity for its lifetime.
Session		A single instance of state information maintained on a tag to carry out the inventory process in communication with a Reader. Gen 2 tags provide for up to four sessions, which allows the tag to participate in inventory with more than one reader at a time, in a time-interleaved fashion.
Signal Attenuation		The weakening of RF energy as it moves further from its source.
Simulated Performance Testing		Testing that relates to hardware and seeks to build a performance profile for certain types of RFID tags and readers in combination with certain types of materials. For example, an RFID tag vendor might have a simulated performance profile run on an EPCglobal-compliant tag to see how it performs on a variety of materials (such as wood, metal, glass with liquid, corrugated, and waxed corrugated).



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<i>Terminology</i>	<i>Abbreviation</i>	<i>Description</i>
Simultaneous ID		An attribute of the communications <i>protocol</i> between an <i>RFID reader</i> and <i>tags</i> that allows a <i>reader</i> to gather data from many tags present in the read field at the same time.
Single-Interrogator Environment		An operating environment (defined above) within which there is a single active Interrogator at any given time.
Singulation		Identifying an individual Tag in a multiple-Tag environment.
Singulation Rate		The rate at which a Reader singulates multiple Tags in a specified interrogation region measured in Tags/second.
Sleep Mode		State where active tag is not transmitting but can receive and respond to transmission directing it to take action such as Wake Up. Used to conserve battery life or to avoid transmission where regulations prohibit such activity
Slot		Slot corresponds to the point in an inventory round at which a Tag may respond. Slot is the value output by a Tag's slot counter; Tags reply when their slot (i.e. the value in their slot counter) is zero. See also Q (above).
Smart Label		A label containing an <i>RFID tag</i> , which can communicate with a reader and store information such as a unique serial number.
Software Action Group	SAG	An EPCglobal Action Group that defines the software functionality and interface standards for the <i>EPCglobal Network™</i> and how these elements interact with distributed enterprise systems. There is one <i>Software Action Group</i> to define global standards across all industries.
Solution Provider	SP	An individual or company that enables supply chain functions through the provision of products and services. Includes hardware and software companies, consultants, system integrators, and training companies.
SSB	SSB	Single sideband
SSB-ASK	SSB-ASK	Single-sideband amplitude-shift keying
Standard		A specification for hardware, software, or data that is either widely used and accepted (de facto) or is sanctioned by a standards organization (de jure).

Terminology	Abbreviation	Description
T		
T=>R	T=>R	Tag-to-Interrogator
Tag		See <i>RFID tag</i> .
Tag Alteration		Any change in the content, capacity, or capability of a Tag to respond to a Reader
Tag Data Protection (Retention)		Ability to retain tag data even when power is no longer being supplied to the tag
Tag Data Protection (Security)		Mechanisms used to ensure that only authorised and/or authenticated requests to create/amend/delete tag data are serviced
Tag Data Translation Schema		Provides a machine-readable file that defines how to translate between different forms of the EPC
Tag ID	TID	Tag-identification or Tag identifier, depending on context
Tag inventory		See Inventory (RFID)
Tag Memory API		One of five Application Programming Interfaces (APIs) provided in the Application Level Events (ALE) standard. The Tag Memory API is an interface through which clients may define symbolic names that refer to data fields of tags.
Tag reuse		Returning a Tag to a retail establishment and/or placing the Tag back into the supply chain after the item to which the Tag was attached has passed through PoS or been otherwise removed from the retail store or supply chain
Tagged Unit Performance Testing		Tests performed on objects in motion (such as items, cases, and pallets) under a set of performance simulated real-world conditions to evaluate "readability" of the RFID tags.
Tag-Identification Layer		Collectively, the set of functions and commands used by an Interrogator to identify and modify Tags (also known as the <i>operating procedure</i>).



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<i>Terminology</i>	<i>Abbreviation</i>	<i>Description</i>
Tari		Reference time interval for a data-0 in Interrogator-to-Tag signaling. The mnemonic "Tari" derives from the ISO/IEC 18000-6 (part A) specification, in which Tari is an abbreviation for Type A Reference Interval.
TDM	TDM	Time-division multiplexing or time-division multiplexed (as appropriate)
Technical Standards		Specifications for hardware and software components of a network, such as physical protocols and interfaces.
Technology Steering Committee	TSC	An EPCglobal steering committee comprised of the co-chairs of the <i>Hardware Action Group</i> and the <i>Software Action Group</i> , an Auto-ID Lab representative and EPCglobal staff to ensure that the technical solutions are consistent with the <i>EPCglobal Network</i> principles, vision and architecture.
Time Division Multiple Access	TDMA	A method of solving the problem of the signals of two readers colliding. Algorithms are used to make sure the readers attempt to read tags at different times.
Trade Item		Any item (product or service) upon which there is a need to retrieve pre-defined information and that may be priced, ordered, or invoiced at any point in any supply chain.
Trading Partner		One or more parties engaged in trade. Examples include retailers, suppliers, brokers, wholesales, distributors, and others.
Transaction Set		A specific structure of electronic data segments, data elements, and codes that communicate information between systems. This structure replaces documents and other forms of business communications, such as purchase orders, invoices, and warehouse shipping orders. Each transaction set consists of the transaction set header and at least one data segment before the transaction set trailer
Transaction Set Identifier		The first data element of a transaction set header segment, which uniquely identifies the <i>transaction set</i> .
Transaction Type		Information (not part of the <i>EAN•UCC System</i>) denoting the particular operation in which the scanned data has been captured.

Terminology	Abbreviation	Description
Transactional Data		Information necessary for the business process being executed. For example, item codes and ordered quantities are transactional as these are mandatory fields within a purchase order: and, may vary by purchase order.
Transceiver		A device that both transmits and receives radio waves.
Transmission Masking		A method by which a Reader obscures information that it is transmitting to a Tag.
Transponder		A radio transmitter-receiver that is activated by a received signal. <i>RFID tags</i> are sometimes referred to as transponders.
U		
UHF Tags		<i>Tags</i> that operate in the 850-1000 MHz range.
Ultra High Frequency	UHF	Radio spectrum from 300 MHz to 3 Ghz.
UMI		User-memory indicator
Unencoded Tag		A Tag whose memory contains no EPC and no user information
Coordinated Universal Time	UTC	Coordinated Universal Time (UTC) is the international time standard as maintained by the Bureau International des Poids et Mesures (BIPM)
Unlock		Unlocking one or more memory areas of a singulated Tag (see Lock and Permalock).
Use Case		A detailed description of a single activity in a business process that identifies data inputs and outputs, performance/timing requirements, the handling of error conditions, and interfaces with external applications.
User Memory		Area of tag memory which is not confined to specific data content and/or layout. Can be used to store data in a pre-determined standard content and/or format. Can also be used to store private data not intended for general interpretation.



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<i>Terminology</i>	<i>Abbreviation</i>	<i>Description</i>
V		
Voluntary Inter-industry Commerce Standards Association	VICS	A not-for-profit member organization with a mission to take a global leadership role in the ongoing improvement of the flow of products and product information throughout the entire supply chain in the retail industry. <i>GS1 US™</i> is the secretariat to the Voluntary Inter-industry Commerce Standards Association.
W		
Wake Up		Transmission instructing tag to exit from the Sleep state and resume normal activity
Wavelength		A measure of distance between the beginning and end, two corresponding points, or a complete cycle in a wave. For verifiers or scanners, this is the unit, measured in nanometers, for the light energy emitted by the device's light source. This is one of two conditions affecting the parameter calculations needed to create a formal ISO-15416 symbol grade.
Word (of storage)	word	Group of binary digits (abbreviated to 'bits') which are usually processed as a single unit. 16 bit words are common in RFID readers and tags
Working Group	WG	In EPCglobal, Working Groups are the primary means by which the Action Groups conduct their business. A Working Group is composed of a subset of Action Group members and convenes to carry out a specific task as chartered by an Action Group.
World Wide Web Consortium	W3C	The World Wide Web Consortium develops interoperable technologies (e.g., specifications, guidelines, software, tools) to lead the web to its full potential. The World Wide Web Consortium is a forum for information, commerce, communication, and collective understanding.
Write		Writing one or more data words to one or more memory areas of a singulated Tag.
Write Once Read Many	WORM	A tag that can be written to only once by the user. Thereafter, the tag can only be read.
Write Range		The distance between a <i>reader</i> and an <i>RFID tag</i> over which data writing operations can be reliably performed.

<i>Terminology</i>	<i>Abbreviation</i>	<i>Description</i>
Write Rate		The rate at which information is transferred to a tag, written into the tag's memory and verified as being correct.
Writing API		One of five Application Programming Interfaces (APIs) provided in the Application Level Events (ALE) standard. The Writing API is an interface through which clients may cause operations to be performed on EPC data carriers through a variety of actuators. In particular, clients may write RFID tags using RFID "readers" (capable of writing tags) and printers
X		
XEB		XPC extension bit
XI		XPC indicator
Xtensible Markup Language	XML	See eXtensible Markup Language.
XPC		Extended protocol control
XTID		Extended TID indicator
Z		
Zone		See field.
0-9		
3rd Party Logistics Provider	3PL	Party providing logistics related services, such as transportation management, supply chain management, warehousing, re-packing products, distribution, and/or assembly.



Errors, Omissions and Additions

If you have suggestions for improving our GS1 EPCglobal Glossary then please send your suggestions to

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