AIAG

Automotive Industry Action Group

B-11

Item Level
Radio Frequency Identification (RFID) Standard

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Published by:
Automotive Industry Action Group
26200 Lahser Road, Suite 200
Southfield, Michigan 48033
Phone: (248) 358-3570 • Fax: (248) 358-3253

APPROVAL STATUS

The AIAG Material Management Steering Committee and designated stakeholders approved this document for publication on January 16, 2008.

ISBN # 9781605341316

FOREWORD

This revision--Revision 7 of the B-11 standard--provides the global RFID user community with the technology to meet the needs of OEMs and the supply chain, including the retail segment, using a single tag throughout an item's life cycle.

Revision 6 of the B-11 standard forged an important feature relating to RFID: namely, the ability to program at the same time onto one RFID tag both EPC-based (Unique Item Identifier) and ISO-based (User Data) information, as provided by the ISO/IEC 18000-6C air interface protocol.

This interoperability feature has shown itself to be of significant potential benefit to parties beyond tire and wheel suppliers and users, and beyond even just the Automotive Industry. An implicit goal of the AIAG Radio Frequency Identification B-11 Revision 7 Work Group was to develop a standard for item-level RFID that would find support both inside and outside the Automotive Industry. Such support and the potential for widespread adoption and use strengthens the relevance of any standard as well as reduces the cost of equipment built to meet that standard.

The specific intent of Revision 7 of the B-11 is to:

- Maintain ISO / EPC interoperability.
- Create a generic item-level RFID specification
  - By moving references to tires, wheels, and bar code labels to legacy appendices and
  - By clarifying a number of technical aspects to assist users in implementing the standard.

The B-11 and Revision 7 are built on these assumptions:

1. Only passive or battery-assisted passive UHF-based (860 MHz - 960 MHz) RFID tags are used.
2. The air interface protocol is ISO/IEC 18000-6C.
3. The data syntax is ISO/IEC 15962, Data Identifier (DI)-based.
4. The B-11 standard was explicitly written for trading partners having the need to encode either retail data, as specified within EPCglobal's TDS v1.3 (or later), in the Unique Item Identifier Memory Block (MB01binary), and / or user data formatted using DIs according to ISO/IEC 17367 and ISO/IEC 15962 in the User Memory Block (MB11binary).

NOTE: If a given set of trading partners needs only a 96-bit EPC-compliant tag, they do not need the AIAG B-11. They need simply the EPC Tag Data Standard and the Class 1 Generation 2 UHF Air Interface Protocol Standard, available from EPCglobal.

Tag Data Standard v. 1.3.1;
http://www.epcglobalinc.org/standards/tds/tds_1_3_1-standard-20070928.pdf

UHF Class 1 Gen 2 Standard v. 1.1.0;
http://www.epcglobalinc.org/standards/uhfc1g2/uhfc1g2_1_1_0-standard-20071017.pdf

In this document, the word "**SHALL**" indicates a requirement and the word "**SHOULD**" indicates a recommendation. **It is the supplier's responsibility to provide RFID tags that meet this standard. Strict adherence to these specifications for RFID tags for item-level identification will reduce implementation costs and increase benefits throughout the industry.**

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ACKNOWLEDGEMENTS

The following individuals and companies were instrumental in developing this standard:

Donald E. Jahncke** ..... Industry Expert
Mark Lamon ..... Aalstec
Paul Wilson ..... Bridgestone Firestone North American Tire LLC
Richard Tervo ..... DaimlerChrysler Corporation
Dr. Roya Ulrich..... DaimlerChrysler Corporation
Sue Hutchinson..... EPCglobal US
Dennis Barlow..... Ford Motor Company
Scott Blow ..... Ford Motor Company
Larry Graham..... General Motors Corporation
Andrew Zeisser ..... Hankook Tire Co., Ltd.
Daryl Collins..... Honda of America Manufacturing
Patrick King..... Michelin Americas R&D Corporation
Stan Lew ..... Michelin North America, Inc.
John Canvin ..... Odette
Sten Lindgren..... Odette Sweden
Paul Belloni ..... Pirelli Tire North America
Paul Chartier ..... Praxis Consultants
Craig K. Harmon ..... Q.E.D. Systems
Dan Kimball..... SRA
Steve Lederer ..... The Goodyear Tire & Rubber Company
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1 DEFINITIONS

Many terms and definitions associated with the subject of this standard have special meaning. Definitions of other related terms used in this document can be found in the documents referenced in Section 4 References.

Table 1. Terms and Definitions

TERM	DEFINITION
Active RFID Tag	RFID device having the ability to produce a radio signal. **NOTE:** Active tags are not within the scope of this document.
Addressability	The ability to address bits, bytes, fields, files, or other portions of memory in the **Tag**.
AIM	Association for **A**utomatic **I**dentification and **M**obility.
Alignment	The orientation of the **Tag** to the reader in pitch, roll, and yaw. This situation applies to both bar code symbols and RFID **Tags**.
Alphanumeric	A character set that contains alphabetic characters (letters) and numeric digits (numbers) and usually other characters such as punctuation marks. Used in both bar code symbols and RFID **Tags**.
ANS **ANSI**	**A**merican **N**ational **S**tandards **I**nstitute document prefix.
ANS MH10 **ANSI MH10.8**	Unit Loads & Transport Packages committee under ANSI. Coding and Labeling of Unit Loads subcommittee under ANS MH10.
Antenna	Antennas are the conductive elements that radiate and / or receive radio frequency energy to and from the **Tag.**
Assigned Relative OID	See **OID**.
Battery-assisted Passive RFID Tag	A battery-assisted passive tag is a tag that uses a battery to improve its functionality and range and functions as a passive tag if the battery is depleted. The distinction between active and passive is NOT whether it has a battery.
Bi-directional	The capability of operating in either direction; e.g., both read and write. Also, the ability to be read from and / or written to from either side of the RFID **Tag**.
Binary	A numbering system with only two values: 0 (zero) and 1 (one). Mathematical base 2, or numbers composed of a series of zeros and ones. Represented by X_2. Example: $MB01_2$
Bit	Short for **B**inary Digi**t**; the smallest unit of data in a computer; i.e, “1”, “0”.