



March 12, 2010

Walmart Private Label Item Level Encoding Standard

Walmart private label item level encoding will be based upon the EPCglobal / GS1 SGTIN-96 encoding standard scheme, with the addition of a Walmart assigned supplier serial site key embedded within the serial number. The addition of the serial site key will ensure no duplication of EPC Ids within Walmart supply chain from multiple supplier encoding sites that produce the same product GTIN.

Suppliers will choose the appropriate partition value based upon their company prefix (See Table 1) and item reference lengths of their product GTIN. It is the supplier's responsibility to ensure that serial numbers are unique for their product.

Requirements:

- 1) Each supplier is responsible for ensuring that their SGTIN-96 serial numbers are unique for their product.**
- 2) Each supplier should obtain a serial site key from Walmart for each private label product SKU they supply to Walmart.**
- 3) Should a supplier use a service bureau to encode the EPC Ids for their product, it is up to the supplier to request and obtain a serial site key for that service bureau for each of their products encoded by that service bureau.**
- 4) Each and every EPC Id encoded tag must be Perma-Locked after successful encoding of the tag. This involves assigning an access and kill password to the extended memory bank of the Gen2 tag and then locking all data within the tag such that any of the contents cannot be written to, killed, or the data wiped clean (altered in any way). These passwords (access / kill) must remain private and treated as any other highly confidential data with appropriate system security in place to protect this data.**
- 5) Each supplier is responsible for ensuring that the data encoded into the EPC Id of the tag is encoded properly and is reflective of what UPC data is associated to the product. EPCIS event notifications should be used to verify contents and associate Purchase Order information to the tag event associated with that order.**

Example:

Company X is supplying the following UPC: **614141007349**

Convert U.P.C. Bar Code number to a GTIN



614141 = U.P.C. Company Prefix
00734 = Item Reference
(assigned by owner of company prefix)
9 = Check Digit
(calculated via algorithm)

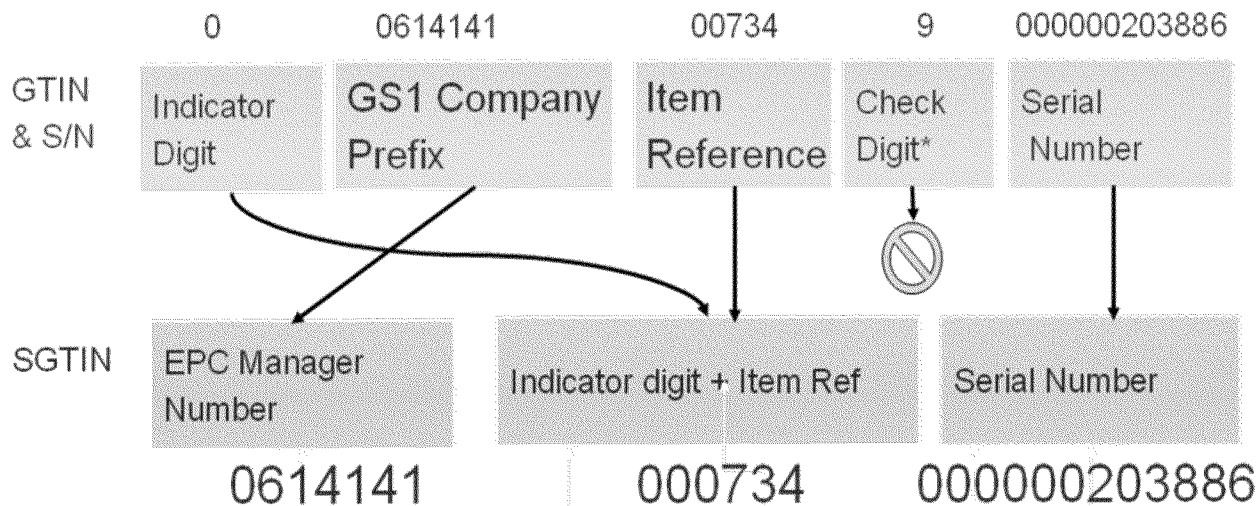
GTIN:

00614141007349

Add the indicator digit, in this case a 0. Then change the U.P.C. Company Prefix to a GS1 Company Prefix by adding a preceding 0 to the U.P.C. Company Prefix.

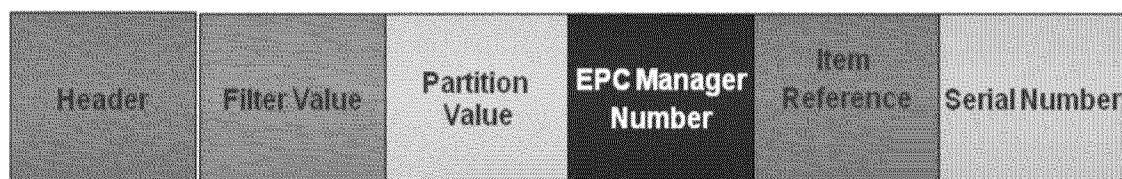
- 0 Indicator Digit
- 0614141 = GS1 Company Prefix
- 00734 = Item Reference
- 9 = Check Digit

Map GTIN into an SGTIN



*The GTIN check digit is not used in the SGTIN, as the Cyclic Redundancy Check (CRC) electronically validates the "goodness" of a read

The rest of an EPC



Select **Header** for SGTIN-96. The header is **48**.

The **Filter Value** is an instruction for the Reader to select or “mask out” certain types of EPCs. (Filter Value 1 represents a POS trade item grouping, i.e. unit for resale)

The **Partition Value** is the length of the EPC Manager Number. Example: 0614141 is seven digits, so the Partition Value is 5 – see Tag Data Standard for partition values.

The **EPC Manager Number** identifies the entity responsible for maintaining the subsequent partitions of the EPC. This is the number you registered with EPCglobal when you became a subscriber.

The **Item Reference** and **Serial Number** portion of the EPC are assigned by the EPC Manager Number owner. Object Class is used to identify the object, generally by category; this field is variable length based on your EPC Manager Number length. The Serial Number is 12-digits and identifies the instance of that object.

48 1 5 0614141 000734 000000203886 (decimal representation = EPC)

Company Y, and Z also supply same UPC to Walmart -

So Company X obtains a unique site serial key from Walmart: 003

A unique site serial key is assigned to each location for generating serial numbers within that facility.

Filter Value Table	
Type	Binary Value
All Others	000
POS Trade Item	001
Full Case for Transport	010
Reserved	011
Inner Pack Trade Item Grouped for Handling	100
Reserved	101
Unit Load	110
Unit Inside Trade Item (Not for individual sale)	111

Table 1

Partition Value Table				
Partition Value	Company Prefix		Item Reference	
	Bits	Digits	Bits	Digits
0 = 000	40	12	4	1
1 = 001	37	11	7	2
2 = 010	34	10	10	3
3 = 011	30	9	14	4
4 = 100	27	8	17	5
5 = 101	24	7	20	6
6 = 110	20	6	24	7

Table 2

SGTIN-96 EPCglobal Tag Data Standard Specification

Header	Filter Value	Partition	Company Prefix	Item Reference	Serial Number
8	1	5	24	20	38
48	Table 1	Table 2	GTIN (-check digit)		8 bit Site Key 30 bit serial
00110000	001	101	GTIN (-indicator digit)	Indicator digit	sssnnnnnnnnnnn

Note: n = serial number (over 1 billion unique serial numbers per product)
s = site serial key number (up to 255 unique suppliers using same sku)

SERIAL NUMBER BITS (38 total = max 274,877,906,944)

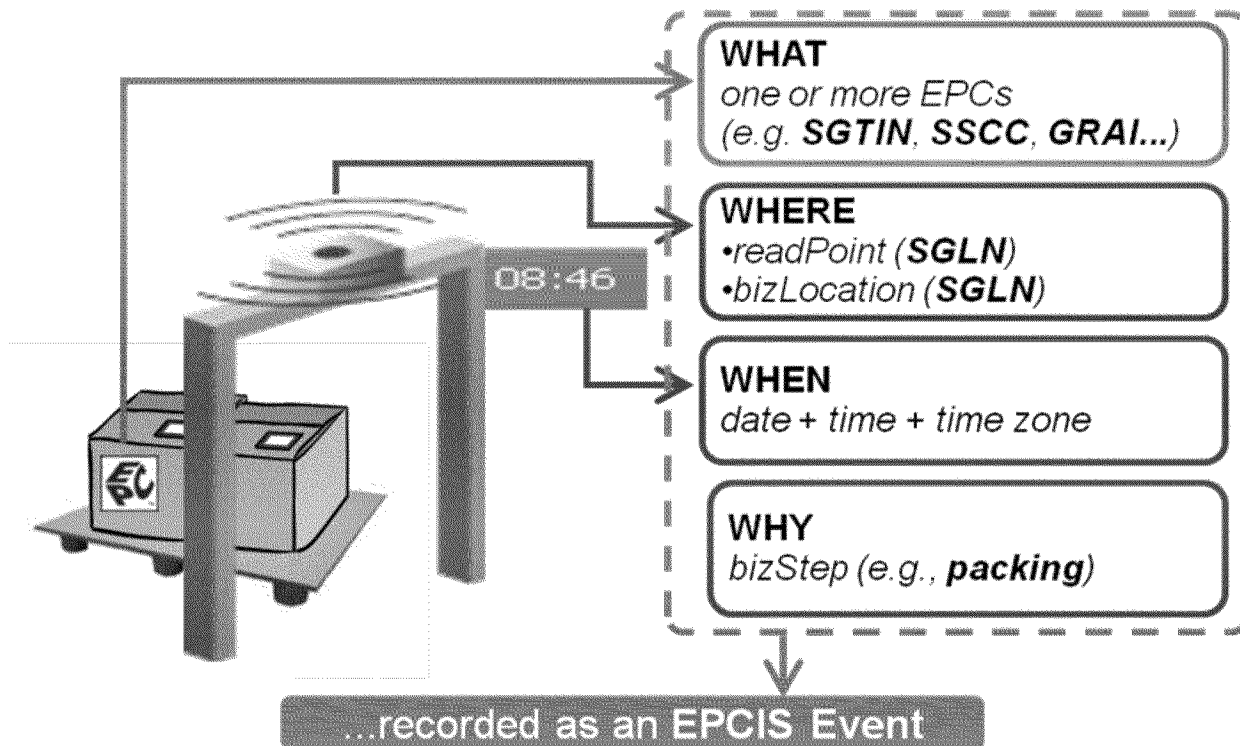
First 8 bits (256) Remaining 30 bits (1,073,741,824)

Site ID #	Binary Site ID	Starting Serial #	Ending Serial #	Range of Serial #'s
0	00000000	0	1,073,741,823	1,073,741,824
1	00000001	1,073,741,824	2,147,483,647	1,073,741,824
2	00000010	2,147,483,648	3,221,225,471	1,073,741,824
3	00000011	3,221,225,472	4,294,967,295	1,073,741,824
255	11111111	273,804,165,120	274,877,906,943	1,073,741,824

After tag is successfully encoded – the contents of the tag must be protected by perma-locking operation.

To ensure tag is encoded correctly and to associate EPC Ids to Purchase Order (or ASN) information, EPCIS event notifications should be used to communicate between encoder and supplier. These events can be verified for accuracy BEFORE a shipment is sent with errors.

EPCIS Events at supply chain read points



Four Core EPCIS Event Types

Object Events

- Observation of EPCs

SGTINs are moved into storage

Aggregation Events

- Physical association of EPCs with parent EPC

SGTINs are picked and assigned an SSCC

Quantity Events

- Inventory of an object class (item reference)

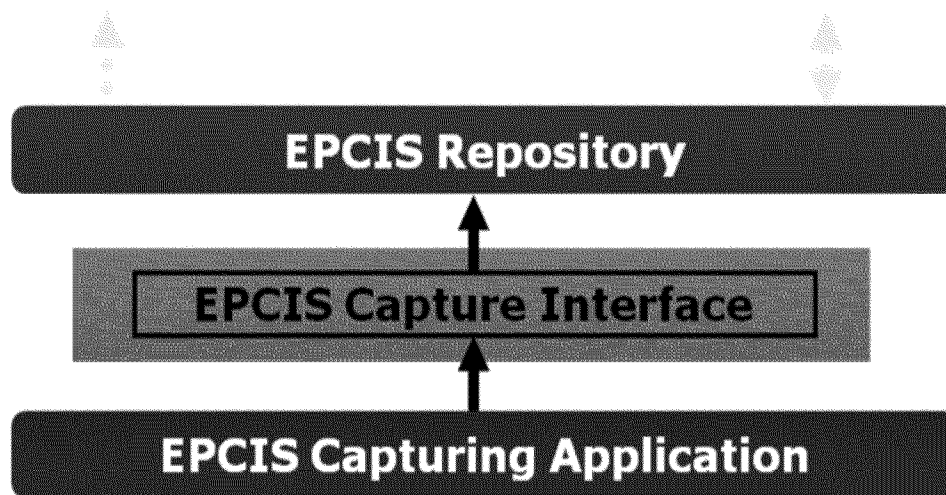
a total of ____ of GTIN 56789 are currently in storage

Transaction Events

- Link one or more EPCs to a business transaction

SGTINs corresponding to DESADV 4711 are shipped

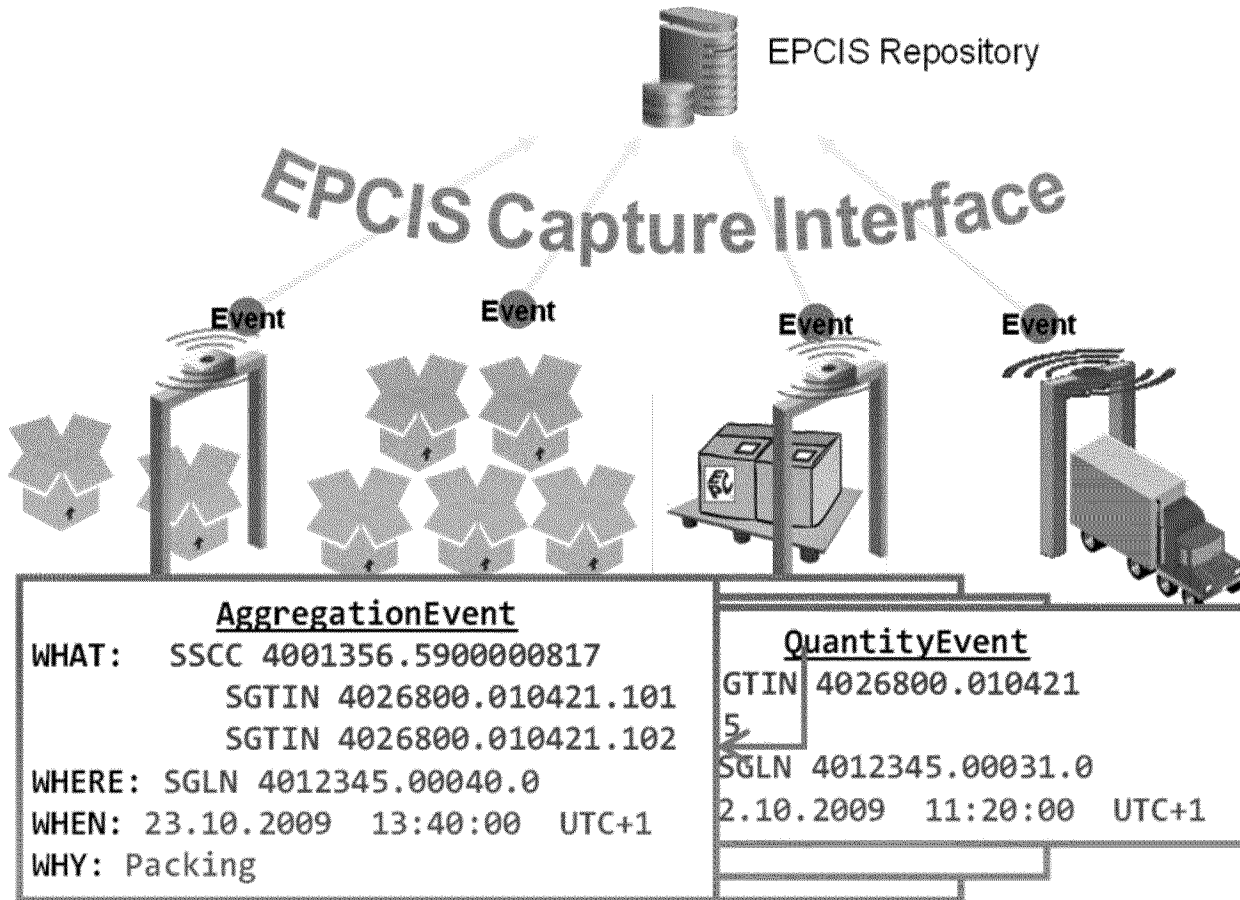
EPCIS Capture Interface



EPCIS Capture Interface . . .

- defines operations by which core events are transmitted from an EPCIS Capturing Application to another EPCIS service
- the structure of EPCIS core events is defined in XSD-format

EPCIS Capture of supply chain events



EPCIS query of supply chain events

