



Barcode, Package, Intelligent Mail®

SPECIFICATION

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1.0 Introduction

1.1 Scope

This document provides specifications for generating and printing the U.S. Postal Service (USPS) Intelligent Mail® Package Barcode (IM™ Package Barcode). Additionally, this specification governs the production of “Extra Service” barcodes such as Certified, Insurance, Delivery Confirmation, Signature Confirmation, etc. Throughout this document, references to the IM™ Package Barcode include “Extra Service” barcodes.

1.2 Purpose

Postal Service and commercial mailers that produce, read, decode, and/or transmit IM™ Package Barcodes shall use this document.

1.3 Intended Use of the Technical Specification

This specification provides all the necessary information to generate USPS-compliant IM™ Package Barcodes and “Extra Services” barcodes, organized into logical categories to simplify its use. Sections 2.1 through 2.5 provide the technical requirements of the barcode. The Mailing Standards of the USPS, Domestic Mail Manual (DMM®) provides official guidelines on the mailing standards for the use and production of package labels presented by mailers. While Publications 91, 109, 199, and 205 provide program guidelines for the use of “Extra Services” barcodes, this technical specification shall be the basis for all technical requirements.

1.4 Background

The IM™ Package Barcode uses the same barcode symbology (GS1-128) and similar data constructs as the legacy Confirmation Services (i.e., Delivery Confirmation and Signature Confirmation) barcode. The Postal Service created these new barcode formats to promote the use of a concatenated barcode structure that joins routing information and a package identification code together in a single barcode. This format will enhance the automation-compatibility of packages with these barcodes on our mail processing equipment, and add “intelligence”. Specific enhancements include:

- A. Concatenated barcode data constructs across all USPS channels that allow for destination routing information (i.e., ZIP Code) and package identification code (PIC) data to be presented in a single barcode.
- B. The addition of a channel-specific Application Identifier (AI) that allows a package to be matched to a specific payment channel which supports revenue assurance and analysis.
- C. Support for both six-digit and nine-digit mailer identifiers (MIDs).
- D. Introduction of a new set of three-digit service type codes (STCs) that identify mail class and service combinations in a single, integrated barcode to increase efficiency in mail transportation (e.g., Priority Mail with Delivery Confirmation), handling, and reporting. Additionally, this new service-type code structure will be used on packages without extra services, providing additional granularity of data for service performance reporting.

1.5 Classification

The IM™ Package Barcode consists of a data string encoded in a barcode that generally follows the GS1-128 specification. However, the Postal Service has many unique operational requirements and deviates slightly from the GS1 specification where necessary. GS1-128 barcodes, formally known as UCC/EAN-128, are a special type of Code 128 (ISO/IEC 15417) barcodes that use Application Identifiers (AIs) to define the encoded data and how to interpret it.

1.6 Point of Contact

Address questions or concerns to:

IM™ PACKAGE BARCODE PROGRAM MANAGER
 US Postal Service
 8403 Lee Highway
 Merrifield, VA 22082-8101
 Tel.: (703) 280-7498

2.0 Requirements

2.1 Print Quality Requirements

2.1.1 Printer Resolution

The Postal Service recommends a printer with a minimum resolution of 203 dots per inch (dpi) for printing the IM™ Package Barcode. Dots per inch is a measure of a printer's resolution, in particular it is the number of individual dots that can be produced within a linear 1-inch (2.54 cm) space.

2.1.2 Reflectance / Symbol Contrast

The mailer shall print the barcode on a substrate (e.g., shipping label) which is uniform in color. Barcode scanning equipment responds to differences between light reflected from the darkest bar and lightest space within barcode symbols, including quiet zones. Reflectance shall be measured on a Postal Service-specified reflectance meter or barcode verifier.

2.1.2.1 Minimum/ Maximum Reflectance

The reflectance value of the darkest bar within the barcode symbol (R_{\min}) shall be equal to or less than half the reflectance value of the lightest space (R_{\max}), when measured in the red spectral range between 630 nanometers (nm) and 675 nm.

$$R_{\min} \leq 0.5R_{\max}$$

2.1.2.2 Symbol Contrast

Symbol contrast is the difference between the highest reflectance value (R_{\max}) and the lowest reflectance value (R_{\min}) within the barcode symbol, including the quiet zones. The symbol contrast shall be greater than 40 percent.

$$\begin{aligned} SC &= R_{\max} - R_{\min} \\ SC &\geq 40\% \end{aligned}$$

2.1.3 Barcode Quality

At least 70 percent of the barcodes in each mailing shall have an overall symbol grade of "B" or better when measured with the appropriate aperture size in the red spectral range between 630 nanometers (nm) and 675 nm. The remainder shall measure no less than a Symbol Grade of "C". Specified symbol grades are based upon the ISO/IEC 15416 Barcode Print Quality Guideline (formerly INCITS 182) which recommends a method of measuring the quality parameters of printed barcode symbols.

The different symbol grades indicate print quality. Only the use of the appropriate aperture for the specific X-dimension of the barcode symbol under consideration will guarantee that the grade obtained from measurement of this symbol is the correct grade according to the ISO/IEC 15416 specified methodology. Therefore, per this methodology, the mailer shall use a 10-mil aperture (0.250 mm) when measuring barcodes printed with X-dimensions between 0.013 and 0.021 inches (13 – 21 mils).

2.2 Physical Barcode Requirements

2.2.1 Barcode Symbology

The IM™ Package Barcode shall consist of a data string encoded in a format that generally follows the GS1-128 specification using Application Identifiers and concatenation*. However, the Postal Service selectively deviates from GS1-128 specifications in several instances as required by operational constraints. Unless otherwise specified, the mailer shall follow GS1 system rules for encoding/decoding element strings in GS1-128 barcode symbols. Only Subset C is permitted for this application. Appendix D of this document defines specific barcode data constructs.

***NOTE: Mailers should pay close attention to the Data Constructs detailed in Appendix D of this document to construct the IM™ Package Barcode properly. Concatenated barcodes use a second Function 1 (FNC1) character immediately following the ZIP Code to join the routing information with the traditional package identification code (PIC). Accidentally omitting this character will cause a format error.**

2.2.2 X-Dimension

A barcode's X-dimension is the nominal width of the narrowest bar or space element within the barcode. X-dimensions are typically measured in mils. One mil is equal to 1/1,000 of an inch. The mailer shall print the barcode with an X-dimension measuring between 0.013 inch (13.0 mils) and 0.021 inch (21.0 mils). X-dimensions ranging from 0.015 to 0.017 inch inclusive are preferred. The X-dimension shall remain constant throughout the barcode symbol and not vary.

2.2.3 Barcode Length

The overall length of the barcode is a function of the number of characters encoded and the X-dimension used.

2.2.4 Barcode Height

The overall minimum height of the barcode shall measure at least 0.75 inch. The Postal Service may permit an alternate height under certain conditions as specified in the DMM or by customer-specific service agreement.

2.3 Quiet / Clear Zone Requirements

2.3.1 Minimum Horizontal Barcode Quiet / Clear Zone

A clear zone measuring at least ten times the X-dimension shall be maintained immediately to the left and right of the barcode. No text, images, or other markings shall appear in this area. The Postal Service recommends a minimum clear zone of 0.25 inch.

2.3.2 Minimum Vertical Barcode Quiet / Clear Zone

A clear zone measuring at least 0.125 inch shall be maintained directly above and below the barcode. No text, images, or other markings shall appear in this area.

2.4 Barcode Identification & Layout Requirements

The IM™ Package Barcode structure shall include the elements defined in 2.4.1 through 2.4.3. These indicators help distinguish the IM™ Package Barcode from other barcodes on a package.

2.4.1 Human-Readable (HR) Representation of the Encoded Barcode Data

The human-readable representation of the data characters encoded in the barcode shall be displayed as specified within this document and in compliance with any applicable guidance in the DMM. The Postal Service requires the Application Identifier (420) and the ZIP Code (5 or 9-digit) be suppressed in the human-readable representation of the barcode data.

The human-readable representation of the barcode shall be displayed at least 0.125 inch, but not more than 0.25 inch below the barcode. The printed height of the characters shall be between 0.090 to 0.125 inch. To enhance readability, the human-readable representation of the barcode data shall be printed in a boldface*, sans serif font, and parsed or separated as defined in Appendix D of this document.

***NOTE: Not all fonts/typefaces print with the same thickness of stroke; “boldface” is a subjective recommendation, conveying the need for emphasis and readability. Helvetica Bold or Arial Bold are examples of simple, boldface fonts, which would satisfy Postal Service requirements.**

2.4.2 USPS Banner

A service banner shall be printed in all uppercase letters centered above the barcode. A clear zone of 0.125, but not more than 0.500 inch shall be maintained between the bottom edge of this text and the top of the barcode, as defined in paragraph 3.3.2. The banner shall be printed in a boldface* sans serif font. The printed height of the characters shall be between 0.090 to 0.125 inch. The human-readable text shall not exceed the total combined length of the barcode and the minimum clear zones to left and right of the barcode. Postal Service Publication 91 contains a table of service banners.

2.4.3 Identification Bars

Horizontal black lines with a thickness within the range of 0.031 to 0.063 inch thick shall be printed above the USPS Banner and below the Human-Readable Representation of the Encoded Barcode Data. The lines shall extend at least the total combined width of the barcode and the minimum clear zones to left and right of the barcode, and may extend beyond this measurement (if applicable) up to the width of the label.

2.5 Barcode Data

2.5.1 Barcode Data Fields

The following fields are used in conjunction with the IM™ Package Barcode. Not every barcode type may use every field, and some fields will be suppressed from the human-readable representation of the barcode.

2.5.1.1 Channel Application Identifier (AI)

This is a specific two-digit application identifier used to identify both the business induction channel from which the mailpiece originated and to indicate where Postal Service may locate a payment record for the mailpiece. Valid Channel Application Identifiers are “91”, “92”, “93”, “94”, and “95”.

Table 1: Channel Application Identifiers

Channel Application Identifier	Use
“91”	Currently in use today. Will remain available for use with legacy constructs.
“92” and “93”	For use by commercial mailers.
“94”	For use with PC Postage and online systems.
“95”	Used in the Postal Service retail environment.

2.5.1.2 Channel Identifier

This one-digit field is used and encoded only in Postal Service-created barcodes (Channel Application Identifier “95”). The Channel Identifier indicates the retail system from which a barcode originated (e.g., POS, APC).

2.5.1.3 Destination ZIP Code

This field may be 5 or 9 digits in length. It will not be required if the size of the mailpiece does not allow sufficient space for its inclusion or if a mailer presents specific evidence citing why it is overly burdensome to include routing information within the mailpiece barcode.

2.5.1.4 Device ID

This six-digit field is used and encoded in Postal Service-created barcodes. The mailer shall use this field within the retail barcode construct to help maintain uniqueness and help with traceability to an exact printing source. In the near term, the Device ID for barcodes printed on POS One will be the PVI Printer ID. An APC will include a Device ID that is the 4-digit machine ID and backfilled with zeroes.

2.5.1.5 Julian Date

This field is used and encoded in Postal Service-created barcodes. The mailer shall use this field within the retail barcode construct to aid in establishing uniqueness. A 4-digit, YDDD format will be used.

2.5.1.6 Mailer Identifier

This field may be 6 or 9 digits in length. Most mailers will be assigned a 9-digit Mailer Identifier, which is used in conjunction with AI “92”. On an individual basis, some mailers or consolidators will be assigned a 6-digit Mailer Identifier, and would then use AI “93”.

2.5.1.7 Mod 10 Check Digit

Every barcode construct shall utilize a 1-digit, Mod 10 Check Digit as the final digit in the barcode data string. The mailer shall only calculate the check digit using the package identification code (PIC) portion of the data. See Appendix E for more information.

2.5.1.8 Postal Code “Application Identifier (AI)”

This is a specific 3-digit GS1 Application Identifier that is used to designate the presence of a delivery Postal Code within a single Postal Authority. This field shall always be “420” and, shall precede the Destination ZIP Code if such routing information is provided. The AI (420) and the ZIP Code (5 or 9 digit) shall be suppressed in the human-readable representation of the barcode data.

2.5.1.9 Serial Number

Every barcode shall contain a serial number. Retail barcodes shall use a 5-digit serial number. Online mailers / systems shall have the option of using a 5 or 8-digit serial number, based on mail volume and uniqueness requirements. Commercial mailers, depending upon length of their Mailer Identifier, may use a 7, 10, 11, or 14-digit serial number.

2.5.1.10 Service Type Code

This 3-digit field identifies the mail class or product and the presence of any extra services. This shall include identifying instances where no extra services have been purchased, e.g., Parcel Post with no extra services. The service type code also identifies if the mailpiece belongs to a special Postal Service program, such as Open & Distribute or Merchandise Return Service.

2.5.1.11 Source Identifier

This 2-digit field shall be used only in conjunction with Channel Application Identifier “94”. It indicates the type of online source/platform that generated the barcode, be it a source external to the Postal Service such as a PC Postage vendor or an internal Postal Service system such as Click-N-Ship.

2.5.2 Barcode Data Constructs

Barcodes shall conform to one of the approved barcode constructs defined in Appendix D based on the appropriate product and/or channel. Appendix C provides an example of the IM™ Package Barcode.

3.0 Quality Assurance Provisions

3.1 Responsibility for Inspection

Labels shall meet the specifications defined in Section 2.1.3. The mailer shall perform routine physical inspection and testing of IM™ Package Barcodes to ensure the quality of production labels.

4.0 Packaging and Packing

This section is not applicable to this specification.

5.0 Appendix A – Terms and Abbreviations

5.1 Terms

Table 2: Glossary

Term	Definition
Aperture	Measure of the size of the beam which reads the barcode
Element String	A piece of data defined in structure and meaning, comprising an identification part (prefix or Application Identifier) and a data part, represented in GS1 System endorsed data carrier.
Function 1 Character (FNC1)	A symbology character used in some GS1 data carriers for specific purposes. FNC1 characters typically follow the start character at the beginning of the barcode and are part of the symbology overhead. Additionally, the FNC1 character can be used to concatenate successive data strings where it would precede the Application Identifier of the subsequent data string.
GS1	GS1 is a global organization 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 multiple sectors.
GS1 Application Identifier	GS1 Application Identifiers are a specific set of defined identifiers used to connect physical and logical things to information or business messages related to them. This field of two or more characters at the beginning of an Element String uniquely defines format and meaning of the string.
GS1 General Specifications	The GS1 System data and application standards related to the marking and automatic identification of trade items, locations, logistic units, assets, and more using barcode, RFID, and GS1 Identification Keys.
GS1-128 Barcode Symbology	A subset of the more general Code 128 that is used exclusively for GS1 System data structures.
Human-Readable Interpretation	Characters that can be read by persons – letters and numbers – as opposed to symbol characters within barcode symbols, which are read by machines.
Identification number	A numeric or alphanumeric field intended to enable the recognition of one entity versus another.
ISO/IEC	ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity.

Term	Definition
Mailer ID	The Mailer ID field is a unique six - or nine - digit Postal Service assigned number used to identify each mailer.
Package Identification Code (PIC)	A Package Identification Code or PIC is a unique data string that serves as a unique tracking number for a mailpiece. Each PIC will consist of an Application Identifier, service type code, data string that will vary based upon the specific data construct, and a MOD 10 check digit.
Quiet Zone	A clear space with no encoded information that precedes the Start Character of a barcode and follows the Stop Character. Formerly referred to as “Clear Area” or “Light Margin.”
R _{max}	Highest reflectance value, normally the reflectance value of the lightest space within the barcode symbol, including the quiet zones.
R _{min}	Lowest reflectance value, normally the reflectance value of the darkest bar within the barcode symbol, including the quiet zones.
Symbol Contrast (SC)	Difference between the highest reflectance value and the lowest reflectance value anywhere in the scan reflectance profile, including the quiet zones.
Service Type Code	Service Type Codes are designators used to represent Postal Service classes of mail in conjunction with the type of Extra Service(s) being requested.
X-dimension	The nominal width of the narrowest bar or space element within the barcode symbol is defined as the X-dimension. X-dimension is normally expressed in “mils,” corresponding to one thousand of an inch (i.e., 0.001 inch).

5.2 Acronyms and Abbreviations

Table 3: Acronyms and Abbreviations

Acronyms and Abbreviations	Acronym Expanded
AIM	Automatic Identification Manufacturers
AI	Application Identifier
APC	A Postal Service Retail System – term is included in this document only to assist Postal Service Personnel in using the IM™ Package Barcode.
DMM	The Mailing Standards of the United States Postal Service, Domestic Mail Manual (DMM 300)
IM™	Intelligent Mail®: A Postal Service initiative for improving both mailpiece visibility and acceptance/delivery processes on letters, flats, packages, and mail aggregates.
IMB	Intelligent Mail Barcode: The Intelligent Mail® barcode is a height-modulated barcode primarily used on letters and flats. It is sometimes mistakenly assumed that the IMB is the same as the IMPB, however the IMB and IMPB are merely two of the suite of Intelligent Mail® barcodes used by the Postal Service.
IMPB	Intelligent Mail Package Barcode (see section 1.4)
ISO/IEC	The International Organization for Standardization and the International Electrotechnical Commission
MPE	Mail Processing Equipment
PIC	Package Identification Code
POS -or- POS One	Abbreviation for a Postal Service Retail System – term included in this document only to assist Postal Service Personnel in using the IMPB
PVI	Abbreviation for Postage Validation Imprinter – term included in this document only to assist Postal Service Personnel in using the IMPB
R _{max}	Reflectance maximum
R _{min}	Reflectance minimum
SC	Symbol Contrast
SN	Serial Number
USPS	United States Postal Service

6.0 Appendix B - References

6.1 Referenced Documents

The following specifications, standards, handbooks and other referenced documents form a part of this specification. Unless otherwise indicated, the issue in effect on the date of solicitation for bid or request for proposal shall apply. The supplier is responsible for acquiring the applicable documents. Suppliers must meet all specified requirements of documents cited in this specification, whether or not they are listed here.

6.2 Order of Precedence

If there is a conflict between the text of this document and the references cited here, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations.

6.3 Postal Service

You may obtain Postal Service documents from the website or Contracting Officer (CO).

6.3.1 Postal Service Websites

Postal Service Home	www.usps.com
Website for general publications	www.about.usps.com/forms-publications/welcome.htm
Website for suppliers	www.about.usps.com/doing-business/suppliers/welcome.htm
Website for supplier-related publications	www.about.usps.com/suppliers/forms-publications.htm

6.3.2 Postal Service Manuals

www.about.usps.com/manuals/welcome.htm

Domestic Mail Manual (DMM)

6.4 Commercial, Organization, and Industry Documents

6.4.1 GS1

GS1: General Specifications

You may obtain copies of GS1 documents from the United States Global Office at:

GS1
 Princeton Pike Corporate Center
 1009 Lenox Drive, Suite 202
 Lawrenceville, New Jersey 08648
 Phone: (609) 620-0200
 Fax: (609) 620-1200
www.gs1us.org

6.4.2 International Organization for Standardization (ISO)

ISO/IEC 15417	Information Technology – Automatic Identification and Data Capture Techniques – Barcode Symbology Specification – Code 128
ISO/IEC 15416	Information Technology – Automatic Identification and Data Capture Techniques – Barcode Print Quality Test Specification – Linear Symbols (formerly INCITS 182)

Direct requests for information to:

Copyright Manager
ISO Central Secretariat
1 rue de Varembé
Case postale 56, CH-1211 Geneva 20, Switzerland

Further information is available at the ISO web site: <http://www.iso.org>.

7.0 Appendix C – Examples of IM™ Package Barcodes

NOTE: Do not use figures shown here as a basis for exact measurement as they are not printed to any scale. These measurements are listed correctly, but illustrations are not intended to be measured.

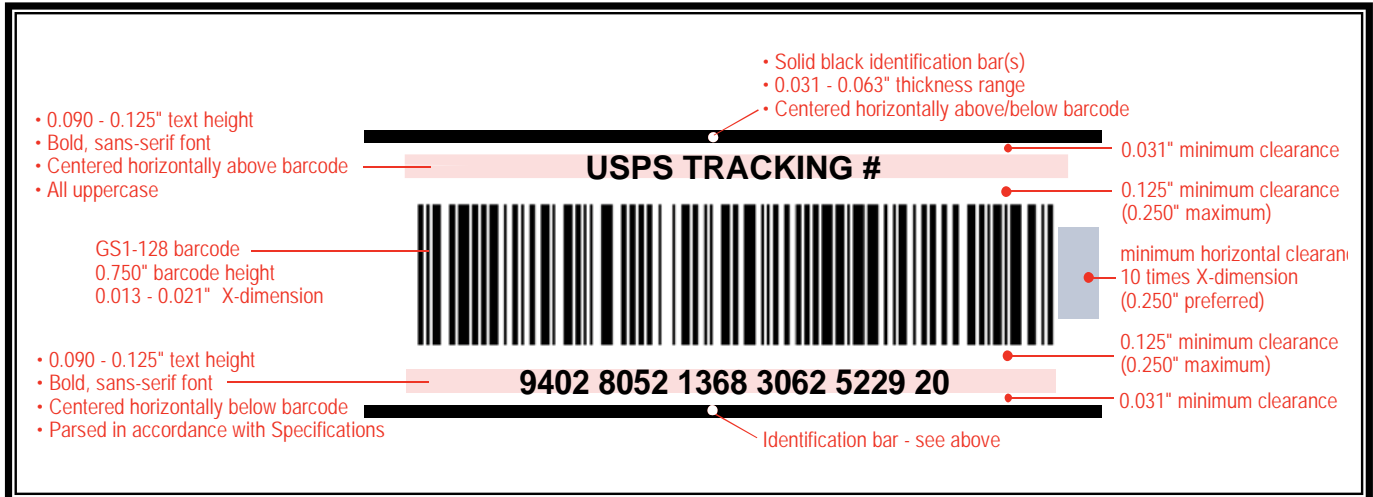


Figure 1: Example of an IM™ Package Barcode*

***NOTE:** the AI (420) and ZIP Code are not shown in the human readable representation of the barcode. The 420 and ZIP Code shall be suppressed from the human readable representation of the barcode data (not printed/displayed).



Figure 2: Illustration indicating the information to be suppressed (420 and ZIP)*

***NOTE:** The 420 and ZIP shall be suppressed from the human readable representation of the barcode data as shown in Figure 1. Figure 2 is only shown to call attention to the need to suppress the AI and ZIP.

8.0 Appendix D - Intelligent Mail® Package Barcode Data Constructs

8.1 Overview of Barcode Data Constructs

In general, the IM™ Package Barcode consists of routing information and tracking information. Some constructs forgo routing information in instances where printing capabilities cannot currently support it or where overall mailpiece size considerations (e.g., Certified Mail letters) may exist. Depending on the channel, services selected, and mail volume, the “tracking” component of the IM™ Package Barcode construct will change. Barcodes may be 22, 26, 30, or 34 digits in length depending upon the channel, mailer type, and services selected.

Consistent with existing practice, the IM™ Package Barcode will be accompanied by a service banner. The service banner will either detail the type of product / service that the customer has purchased or will provide scanning instructions to Postal Service delivery personnel.

8.2 Overview of Barcode Data Fields

The following fields are used in conjunction with the IM™ Package Barcode. See Table 4 below. Not every barcode type may use every field, and some fields will be suppressed from the human-readable representation of the barcode.

Table 4: Overview of Data Fields Used with the IM™ Package Barcode

Data Field	Field Length	Comments
Postal Code “Application Identifier (AI)”	3	Designates the presence of a delivery Postal Code within a single Postal Authority. Field is always “420.” Shall be suppressed from human readable text (not displayed/printed).
Destination ZIP Code	5 or 9	Shall be suppressed from human readable text (not displayed/printed).
Channel Application Identifier (AI)	2	Identifies the segment from which the mailpiece originated and indicated how the Postal Service may locate a payment record for the mailpiece
Service Type Code	3	Identifies the mail class or product and the presence of any extra services
Source Identifier	2	Used with Channel Application Identifier “94”. Indicates type of online source/platform that generated the barcode
Channel Identifier	1	Indicates the retail system from which a barcode originated (e.g., POS, APC).
Device ID	6	Use this field in the retail barcode construct to help maintain uniqueness and traceability to an exact printing source
Mailer Identifier	6 or 9	Assigned Mailer Identifier, 9-digit used with AI “92”, 6-digit used with AI “93”.
Julian Date	4	Use this field in the retail barcode construct to aid in establishing uniqueness. A 4-digit, YDDD format will be used
Serial Number	5, 7, 8, 10, 11, or 14	9-digit Mailer Identifiers use a 5, 7, or 11-digit number; 6-digit Mailer Identifiers use an 8, 10, or 14-digit number.
Mod 10 Check Digit	1	A 1-digit, Mod 10 Check Digit is the final digit in the barcode data string. Calculate the check digit using the package identification code (PIC) portion of the data

8.3 Overview of Channel-Specific Constructs

For the IM™ Package Barcode, three primary “channels” or payment categories exist: commercial, online, and retail. The channel AI — “92”, “93”, “94”, or “95” — embedded within the barcode identifies the channel through

which the barcode originated and also indicates the payment system where the Postal Service can expect to locate a payment record. Different fields are included in the barcode depending on its channel. For example, commercial barcodes will always include the Mailer Identifier, while Retail barcodes will not include the mailer identifier, but will include a channel identifier to indicate the exact system from which the barcode originated.

8.4 Commercial Mailer Constructs

The barcode construct for commercial mailers is nearly identical to the barcode construct used today for Confirmation Services. Most mailers will continue to be assigned and use a 9-digit mailer identifier and thus would include a channel AI of "92". On an individual basis, large mailers may be assigned a 6-digit Mailer Identifier and would then use a channel AI of "93." Rather than the 2-digit service type code used today, mailers will include a 3-digit service type code that signals the mail class or product and service combination. Depending on the length of the mailer identifier, different length serial numbers may be used. This option will enable large-volume mailers to maintain uniqueness among their mailpieces, or alternatively allow mailers to embed their own data within the Postal Service's barcode.

The IM™ Package Barcode for commercial mailers carries a data payload of up to 34 digits comprised of the following elements. See Table 5 below.

Table 5: IM™ Elements of a Package Barcode for Commercial Mailers

Type	Field	Field Length (in digits)	Comments
Routing Information ¹	Postal Routing Code Application Identifier	3	Always "420" when used; must be used if Destination ZIP Code is included. Shall be suppressed from human readable text (not displayed/printed).
	Destination ZIP Code	5 or 9	Shall be suppressed from human readable text (not displayed/printed).
Tracking Information	Channel Application Identifier	2	Always "92" when a 9-digit Mailer Identifier is used. Always "93" when a 6-digit Mailer Identifier is used.
	Service Type Code	3	
	Mailer Identifier	6 or 9	
	Serial Number	7,10,11,14	If the Mailer Identifier is 9 digits, use a 7- or 11- digit number; if the Mailer Identifier is 6 digits, use a 10- or 14- digit number.
	Mod 10 Check Digit	1	
Total Data Payload		34 (maximum)	

NOTE¹: As of 10/2008, Commercial Based price for Priority Mail makes Routing Information mandatory. It also may be necessary for participation in other specific Postal Service programs or to obtain certain types of discounts.

8.5 Detailed Commercial Barcode Data Constructs

NOTE: Human Readable strings in the following sample figures may not display valid data components (ZIP: 12345, MID: 912345678, or MOD 10 check digit 1, for e.g.) but are used to assist in understanding layout. Where the length of the data fields exceed 10 digits (zero used for the tenth digit), a “#” symbol represents the remaining numeric characters of an individual field.

Table 6: C01 - Commercial Mail Construct

Format C01	Commercial Mail (9-digit Mailer ID, 9-digit ZIP Code)
Data Field	Field Length
“420” Postal Routing Code Application Identifier	3 digits
9-digit Destination ZIP	9 digits
“92” Channel Application Identifier	2 digits
Service Type Code	3 digits
Mailer ID	9 digits
Serial #	7 digits
Mod 10 Check Digit	1 digit
TOTAL	34 digits

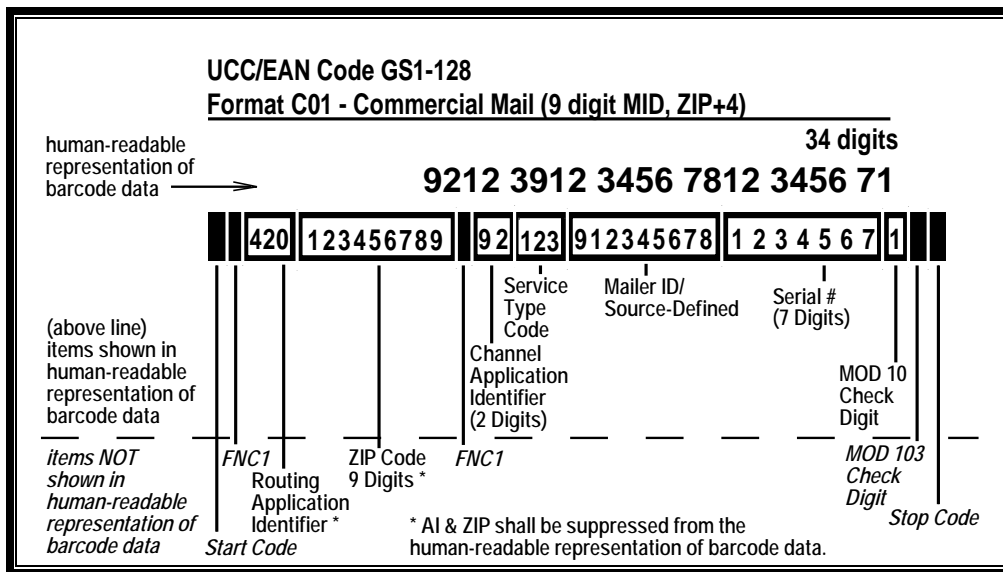


Figure 3: C01 – Visible and Non-Visible (Encoded/ Overhead) Elements

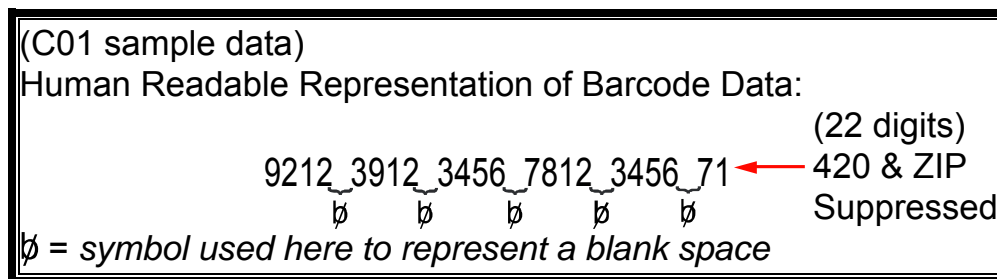


Figure 4: C01 – Parsing of the Human-Readable Data

Table 7: C02 - Commercial Mail Construct

Format C02	Commercial Mail (9-digit Mailer ID, 5-digit ZIP Code)
Data Field	Field Length
“420” Postal Routing Code Application Identifier	3 digits
5-digit Destination ZIP	5 digits
“92” Channel Application Identifier	2 digits
Service Type Code	3 digits
Mailer ID	9 digits
Serial #	11 digits
Mod 10 Check Digit	1 digit
TOTAL	34 digits

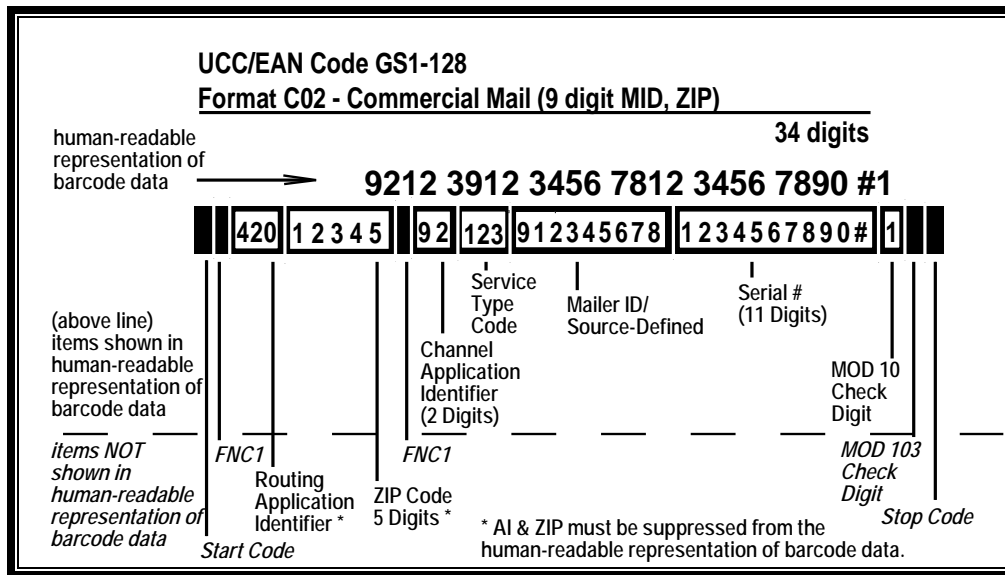


Figure 5: C02 – Visible and Non-Visible (Encoded/ Overhead) Elements

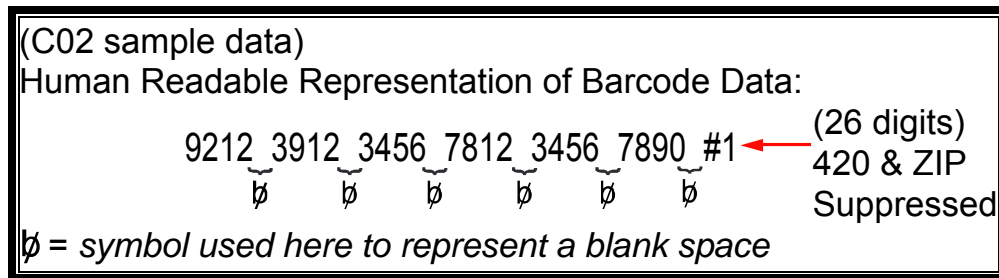


Figure 6: C02 – Parsing of the Human-Readable Data

Table 9: C04 - Commercial Mail Construct

Format C04	Commercial Mail (9-digit Mailer ID, no ZIP Code)
Data Field	Field Length
"92" Channel Application Identifier	2 digits
Service Type Code	3 digits
Mailer ID	9 digits
Serial #	7 digits
Mod 10 Check Digit	1 digit
TOTAL	22 digits

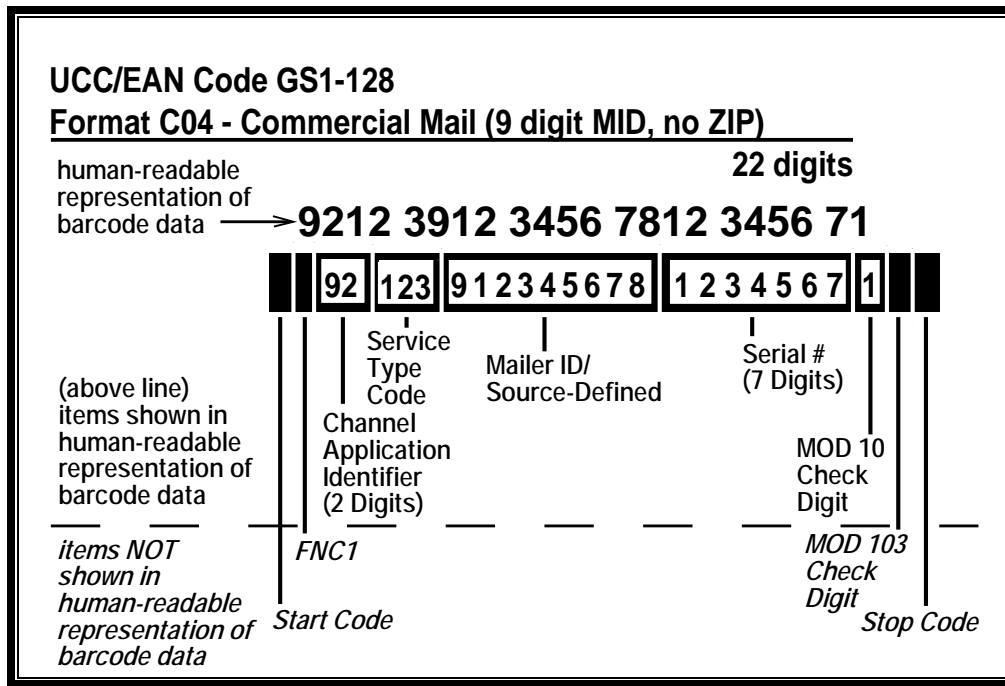


Figure 9: C04– Visible and Non-Visible (Encoded/ Overhead) Elements

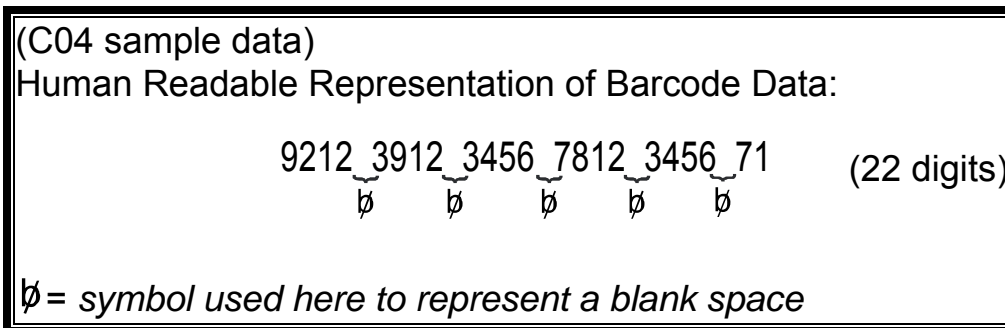


Figure 10: C04 – Parsing of the Human-Readable Data

Table 11: C06 - Commercial Mail Construct

Format C06	Commercial Mail (6-digit Mailer ID, 5-digit ZIP Code)
Data Field	Field Length
"420" Postal Routing Code Application Identifier	3 digits
5-digit Destination ZIP	5 digits
"93" Channel Application Identifier	2 digits
Service Type Code	3 digits
Mailer ID	6 digits
Serial #	14 digits
Mod 10 Check Digit	1 digit
TOTAL	34 digits

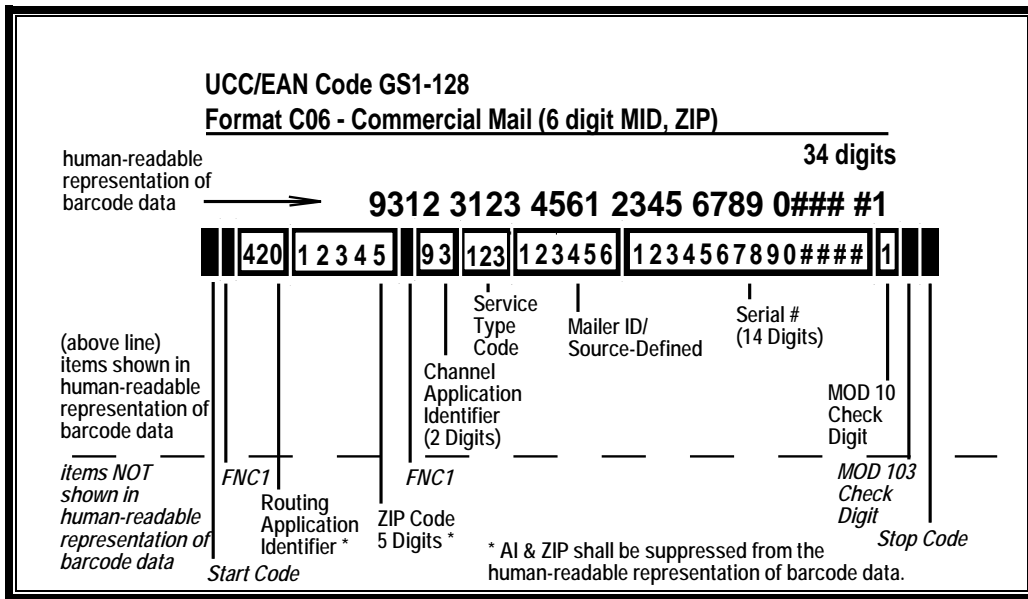


Figure 13: C06 – Visible and Non-Visible (Encoded/ Overhead) Elements

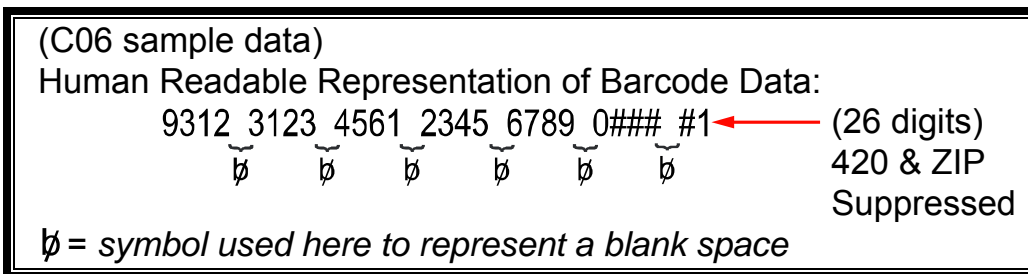


Figure 14: C06 – Parsing of the Human-Readable Data

Table 12: C07 - Commercial Mail Construct

Format C07	Commercial Mail (6-digit Mailer ID, 5-digit ZIP Code)
Data Field	Field Length
“420” Postal Routing Code Application Identifier	3 digits
5-digit Destination ZIP	5 digits
“93” Channel Application Identifier	2 digits
Service Type Code	3 digits
Mailer ID	6 digits
Serial #	10 digits
Mod 10 Check Digit	1 digit
TOTAL	30 digits

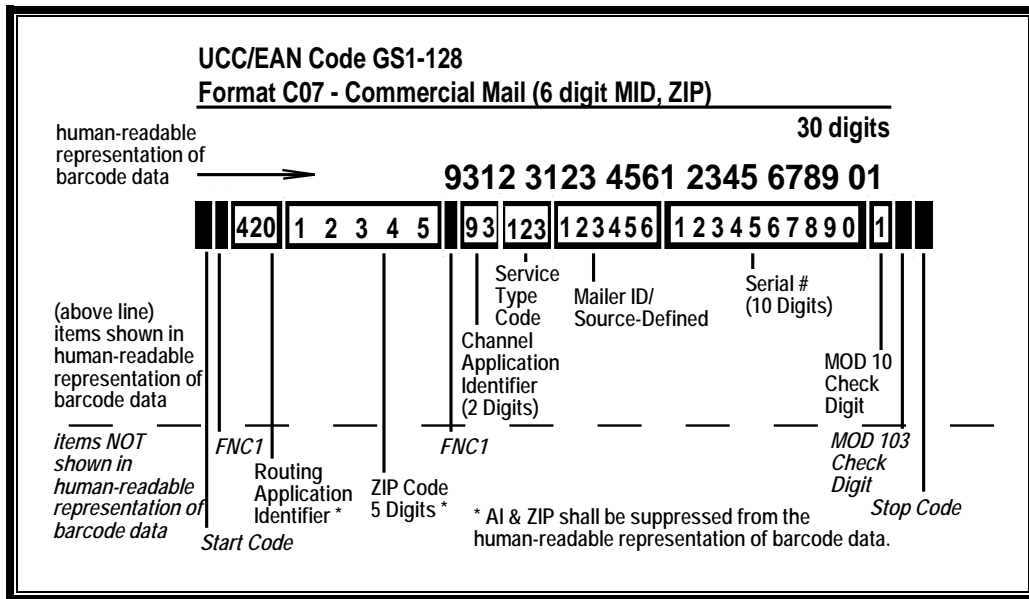


Figure 15: C07 – Visible and Non-Visible (Encoded/ Overhead) Elements

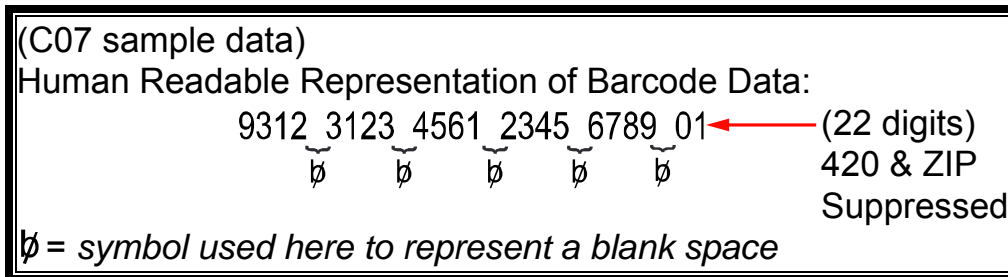


Figure 16: C07 – Parsing of the Human-Readable Data

Table 13: C08 - Commercial Mail Construct

Format C08	Commercial Mail (6-digit Mailer ID, no ZIP Code)
Data Field	Field Length
"93" Channel Application Identifier	2 digits
Service Type Code	3 digits
Mailer ID	6 digits
Serial #	10 digits
Mod 10 Check Digit	1 digit
TOTAL	22 digits

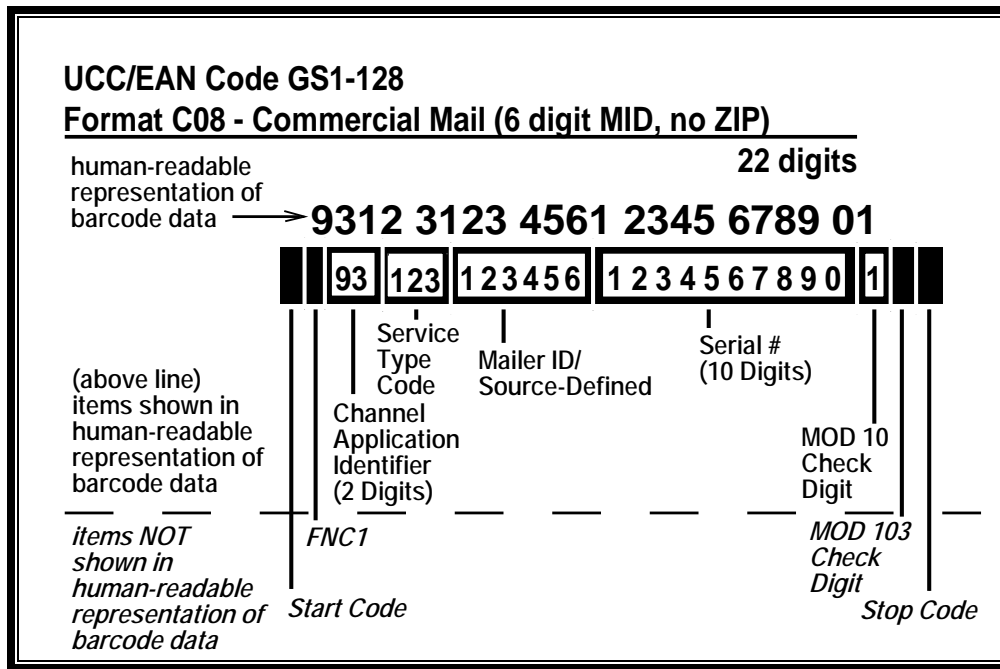


Figure 17: C08 – Visible and Non-Visible (Encoded/ Overhead) Elements

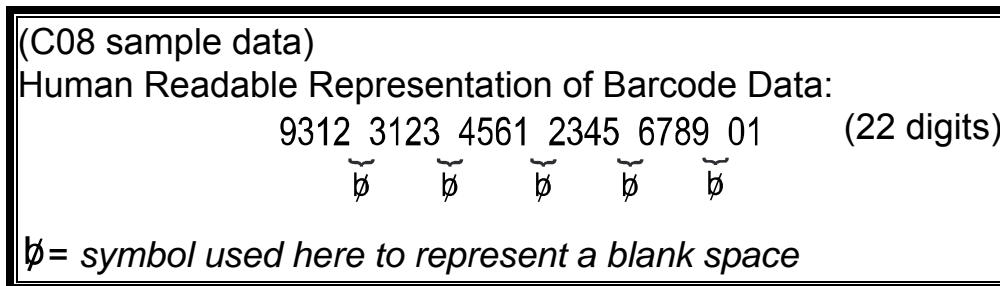


Figure 18: C08 – Parsing of the Human-Readable Data

Table 14: C09 - Commercial Mail Construct

Format C09	Commercial Mail (6-digit Mailer ID, no ZIP Code)
Data Field	Field Length
“93” Channel Application Identifier	2 digits
Service Type Code	3 digits
Mailer ID	6 digits
Serial #	14 digits
Mod 10 Check Digit	1 digit
TOTAL	26 digits

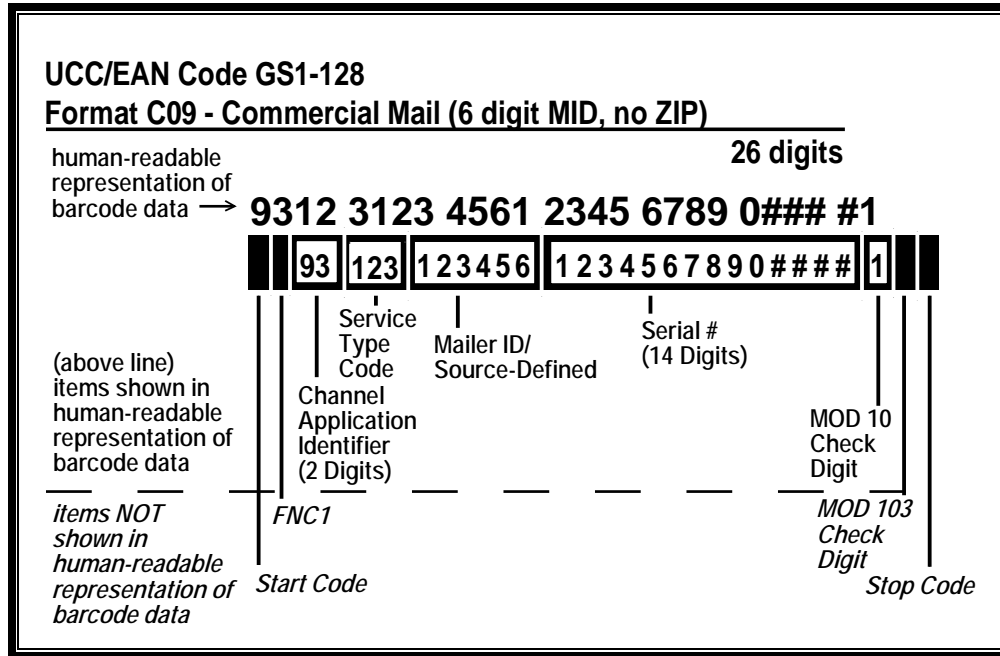


Figure 19: C09 – Visible and Non-Visible (Encoded/ Overhead) Elements

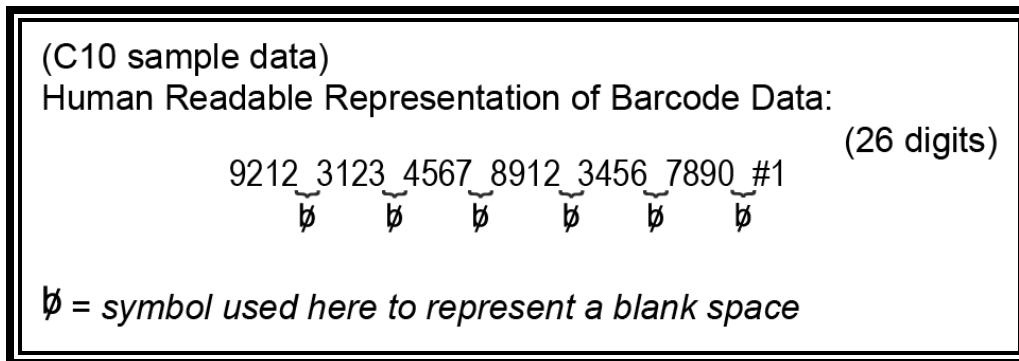


Figure 20: C09 – Parsing of the Human-Readable Data

Table 15: C10 - Commercial Mail Construct

Format C10	Commercial Mail (9-digit Mailer ID, no ZIP Code)
Data Field	Field Length
"92" Channel Application Identifier	2 digits
Service Type Code	3 digits
Mailer ID	9 digits
Serial #	11 digits
Mod 10 Check Digit	1 digit
TOTAL	26 digits

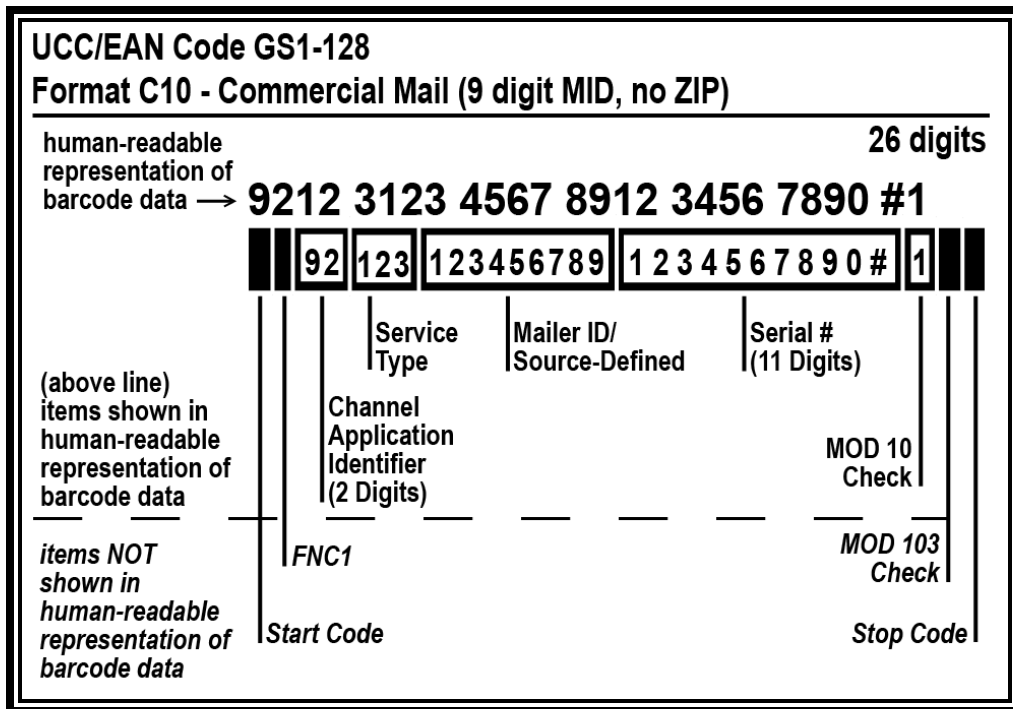


Figure 21: C10 – Visible and Non-Visible (Encoded/ Overhead) Elements

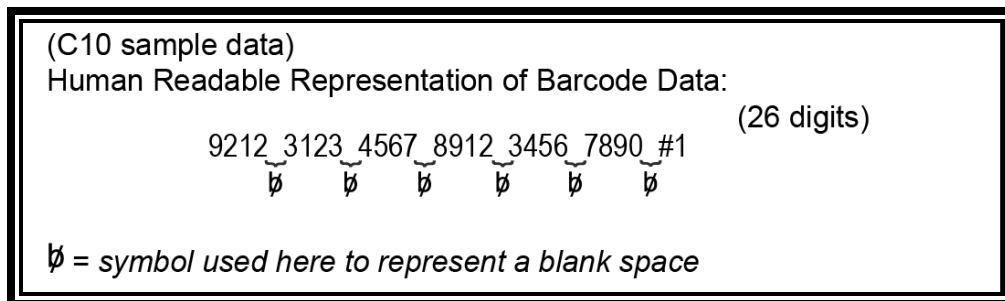


Figure 22: C10 – Parsing of the Human-Readable Data

8.6 Online Constructs

The online constructs established for the IM™ Package Barcode are for use with packages originating from Postal Service systems such as Click-N-Ship or the WebTools APIs and those where the postage was paid using a commercial PC Postage application or a digital postage meter that transmits tracking data to the Postal Service electronically. The goal of the online construct is to be reasonably flexible to support instances where individuals or small businesses are generating barcodes and then some system — on their behalf — is providing electronic tracking data to the Postal Service for that mailpiece.

Generally, systems outside of the Postal Service will include a Mailer Identifier in the barcode, as would a commercial mailer. However, since barcodes generated by Postal Service systems stem from a trusted source and do not truly fit within the “Mailer ID” paradigm, those systems will have the option of using a “Source Identifier” field in place of the Mailer Identifier. The systems that select this approach shall use the “Source Identifier” consistently. Each online barcode that uses Channel Application Identifier 94 shall also include the Source Identifier field. This field indicates the nature of the source, whether it is a Postal Service system or an external system that services individual or smaller user groups. Online mailers that purchase most extra services will have the opportunity to track and / or confirm delivery of their mailpieces via the Postal Service’s Track & Confirm site.

The IM™ Package Barcode for Online Mailers carries a data payload of up to 34 digits composed of the following elements:

Table 16: IM™ Elements of a Package Barcode for Online Mailers

Type	Field	Field Length (in digits)	Comments
Routing Information ²	Postal Routing Code Application Identifier	3	Always “420” when used; must be used if Destination ZIP Code is included. Shall be suppressed from human readable text (not displayed/printed).
	Destination ZIP Code	5 or 9	Shall be suppressed from human readable text (not displayed/printed).
Tracking Information	Channel Application Identifier	2	Always “94”
	Service Type Code	3	
	Source Identifier	2	To be assigned to each Online System
	Mailer Identifier / Source Defined	6 or 9	External mailers will receive the standard 6- or 9-digit Mailer ID; internal systems have the option of defining a specialized identifier
	Serial Number	5 or 8	If the Mailer / Source Identifier is 9 digits, use a 5-digit number; if the Mailer Identifier is 6 digits, use an 8-digit number
	Mod 10 Check Digit	1	
Total Data Payload		34 (maximum)	

NOTE²: Routing Information is not mandatory but is highly encouraged. It may be necessary for participation in specific Postal Service programs or to obtain certain types of discounts.

Table 18: N02 - Online / PC Postage Label Construct

Format N02	Online / PC Postage Label (6-digit mailer ID, 9-digit routing ZIP Code)
Data Field	Field Length
"420" Postal Routing Code Application Identifier	3 digits
9-digit Destination ZIP	9 digits
"94" Channel Application Identifier	2 digits
Service Type Code	3 digits
Source Identifier (e.g., CNS, PC-Postage Vendor, Meter)	2 digits
Mailer ID / Source-Defined	6 digits
Serial #	8 digits
Mod 10 Check Digit	1 digit
TOTAL	34 digits

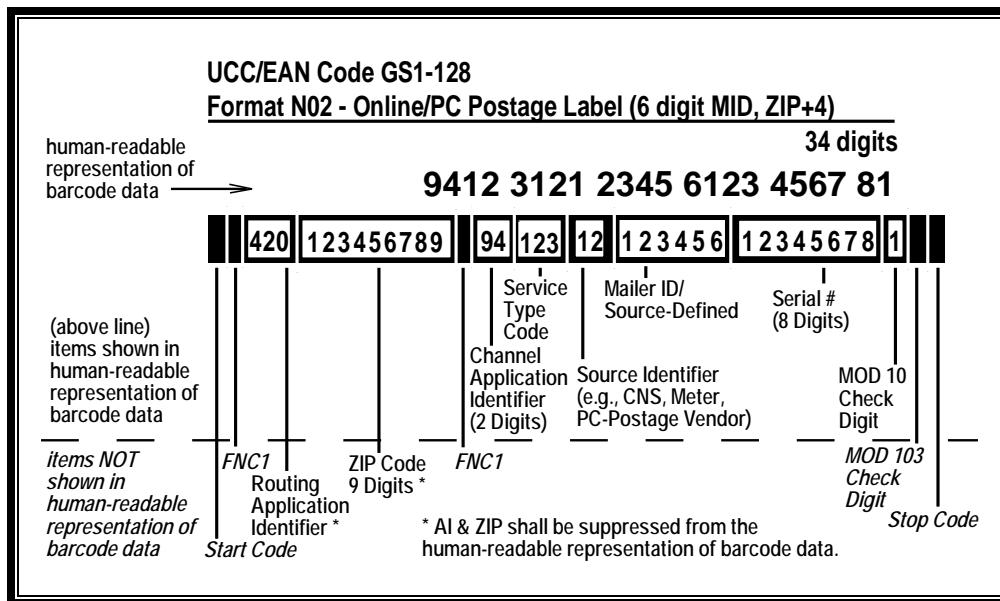


Figure 25: N02 – Visible and Non-Visible (Encoded/ Overhead) Elements

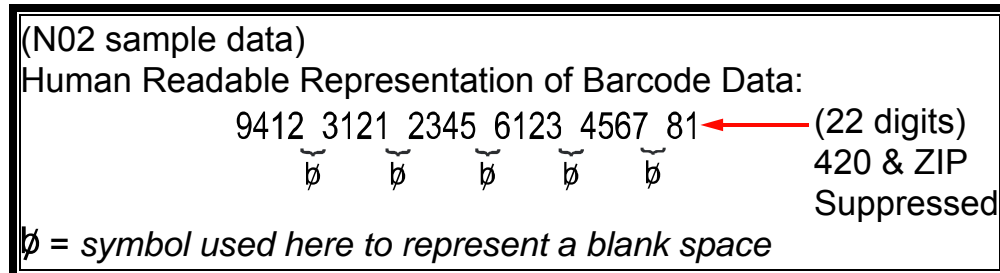


Figure 26: N02 – Parsing of the Human-Readable Data

Table 19: N03 - Online / PC Postage Label Construct

Format N03	Online / PC Postage Label (6-digit mailer ID, no routing ZIP Code)
Data Field	Field Length
"94" Channel Application Identifier	2 digits
Service Type Code	3 digits
Source Identifier (e.g., CNS, PC-Postage Vendor, Meter)	2 digits
Mailer ID / Source-Defined	6 digits
Serial #	8 digits
Mod 10 Check Digit	1 digit
TOTAL	22 digits

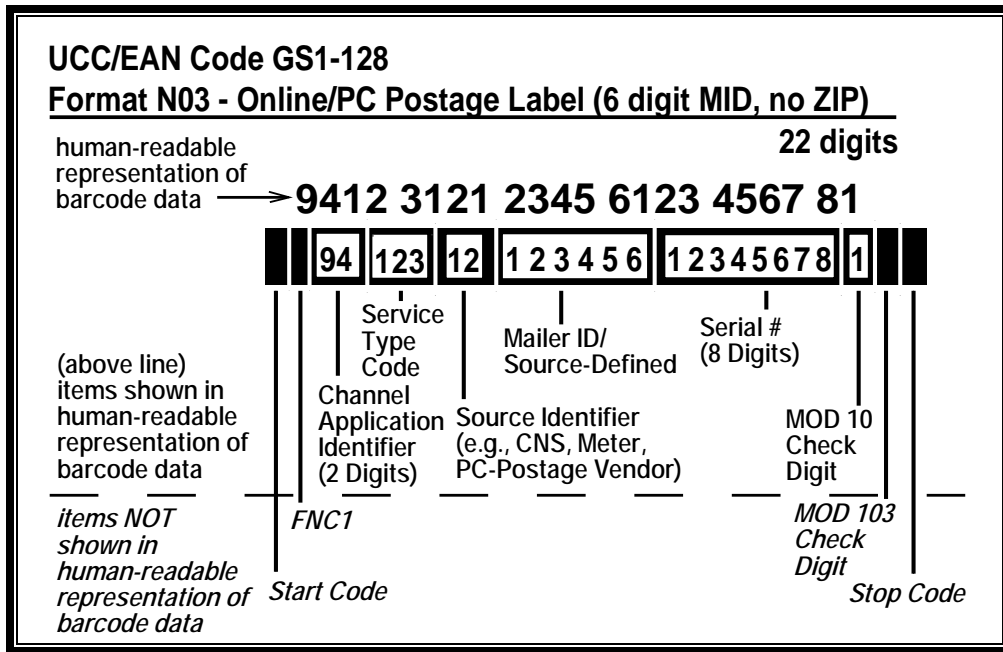


Figure 27: N03 – Visible and Non-Visible (Encoded/ Overhead) Elements

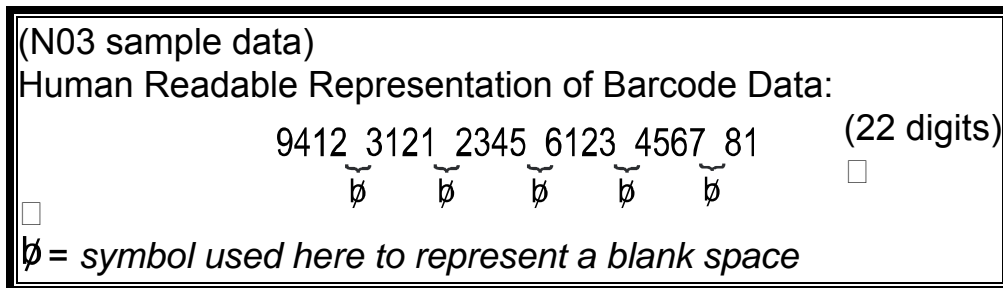


Figure 28: N03 – Parsing of the Human-Readable Data

Table 20: N04 - Online / PC Postage Label Construct

Format N04	Online / PC Postage Label (9-digit mailer ID, 5-digit routing ZIP Code)
Data Field	Field Length
"420" Postal Routing Code Application Identifier	3 digits
5-digit Destination ZIP	5 digits
"94" Channel Application Identifier	2 digits
Service Type Code	3 digits
Source Identifier (e.g., CNS, PC-Postage Vendor, Meter)	2 digits
Mailer ID / Source Defined	9 digits
Serial #	5 digits
Mod 10 Check Digit	1 digit
TOTAL	30 digits

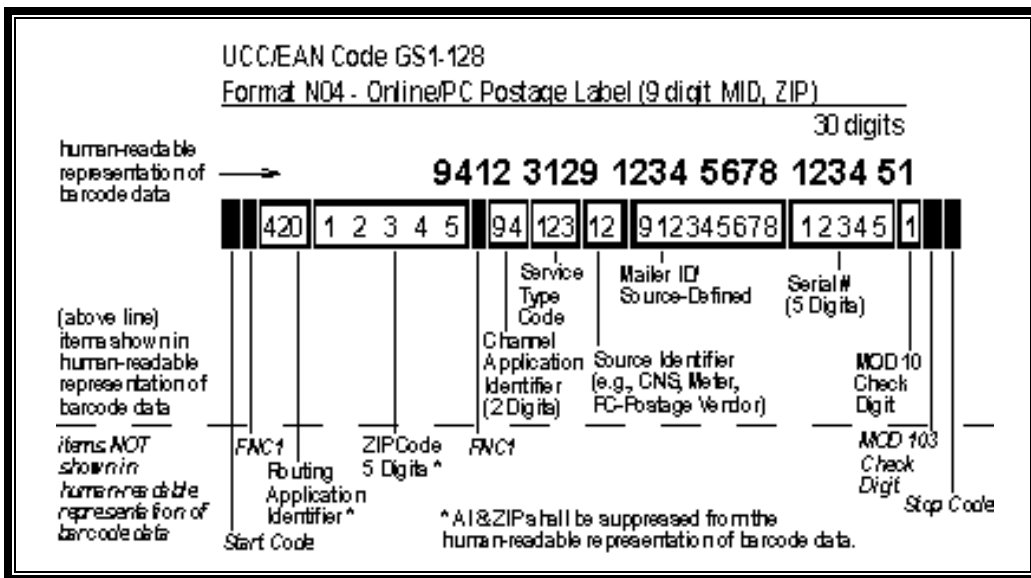


Figure 29: N04 – Visible and Non-Visible (Encoded/ Overhead) Elements

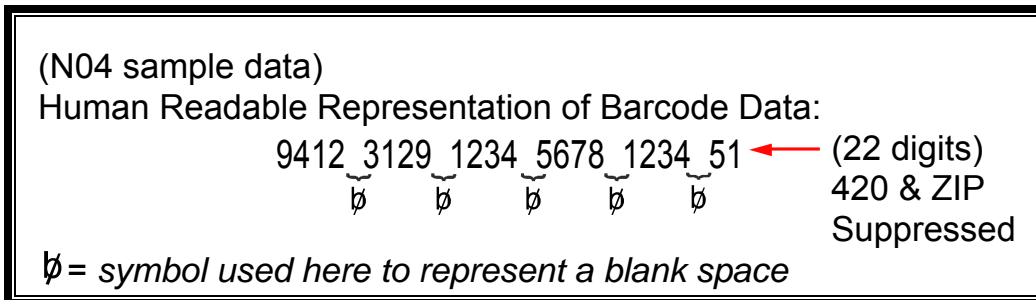


Figure 30: N04 – Parsing of the Human-Readable Data

Table 21: N05 - Online / PC Postage Label Construct

Format N05	Online / PC Postage Label (9-digit mailer ID, 9-digit routing ZIP Code)
Data Field	Field Length
"420" Postal Routing Code Application Identifier	3 digits
9-digit Destination ZIP	9 digits
"94" Channel Application Identifier	2 digits
Service Type Code	3 digits
Source Identifier (e.g., CNS, PC-Postage Vendor, Meter)	2 digits
Mailer ID / Source Defined	9 digits
Serial #	5 digits
Mod 10 Check Digit	1 digit
TOTAL	34 digits

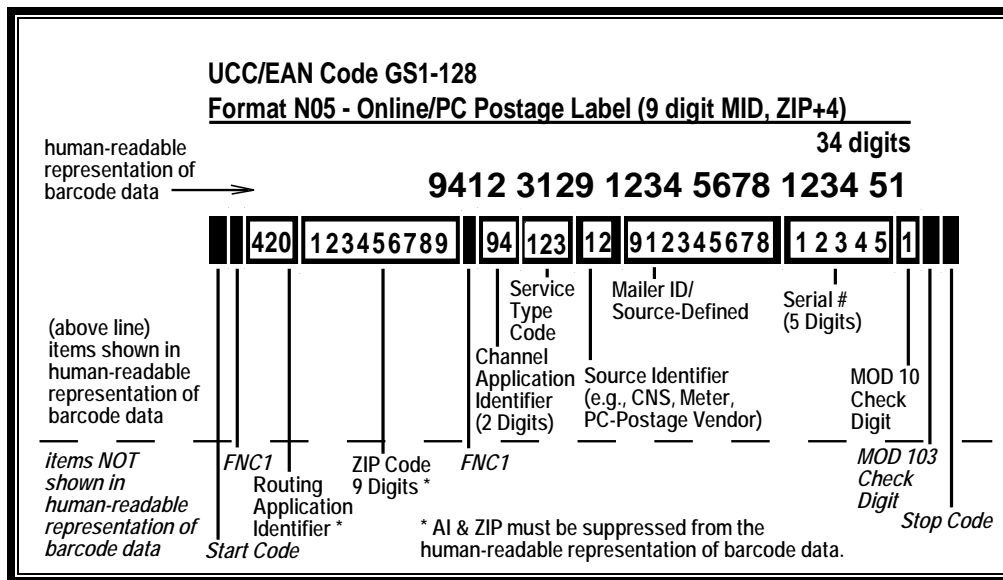


Figure 31: N05 – Visible and Non-Visible (Encoded/ Overhead) Elements

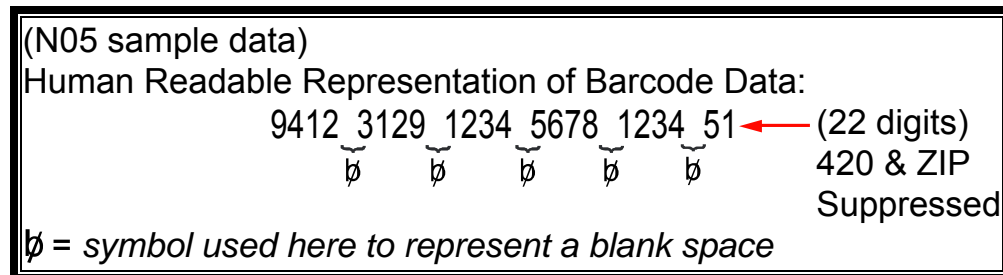


Figure 32: N05– Parsing of the Human-Readable Data

Table 22: N06 - Online / PC Postage Label Construct

Format N06	Online / PC Postage Label (9-digit mailer ID, no routing ZIP Code)
Data Field	Field Length
“94” Channel Application Identifier	2 digits
Service Type Code	3 digits
Source Identifier (e.g., CNS, PC-Postage Vendor, Meter)	2 digits
Mailer ID / Source Defined	9 digits
Serial #	5 digits
Mod 10 Check Digit	1 digit
TOTAL	22 digits

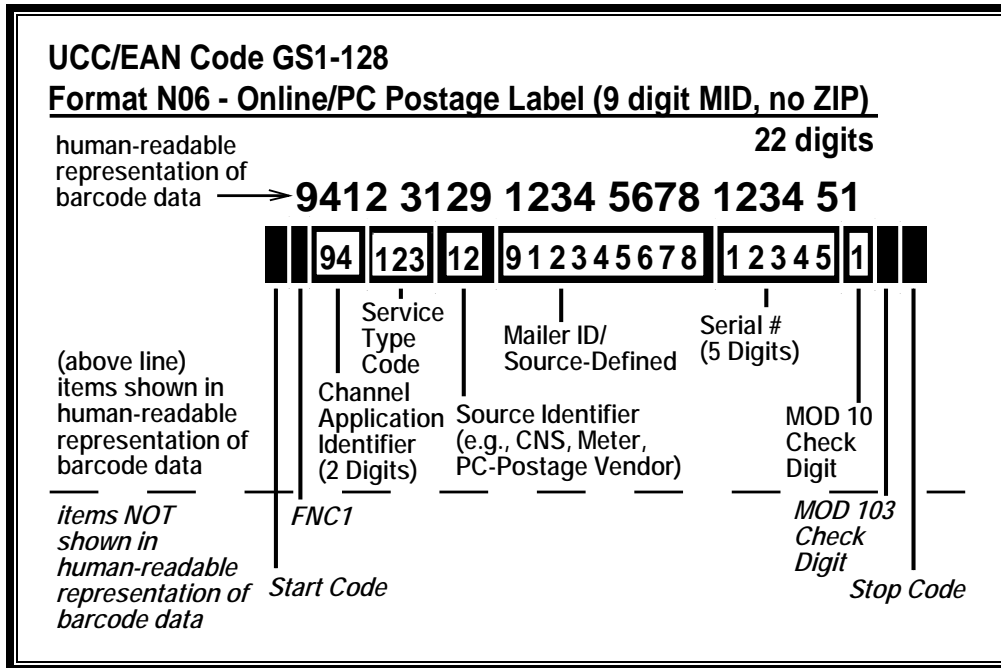


Figure 33: N06 – Visible and Non-Visible (Encoded/ Overhead) Elements

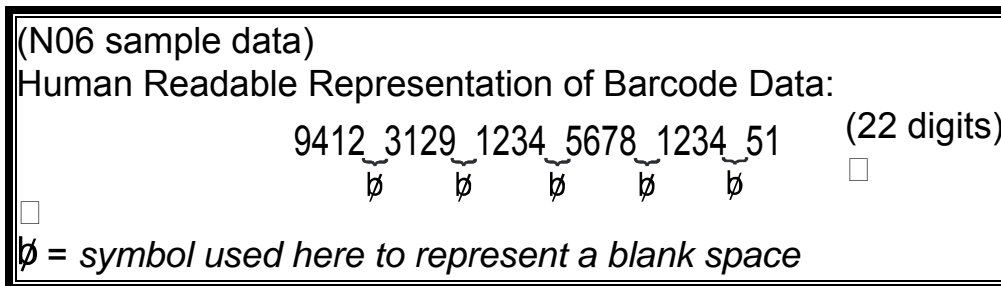


Figure 34: N06– Parsing of the Human-Readable Data

8.8 Retail Constructs

In conjunction with the introduction of the IM™ Package Barcode, an effort is underway to begin printing tracking barcodes dynamically at POS One terminals. While the APCs currently print barcodes for mailpieces on demand, today's retail customer who presents packages across the counter typically affixes pre-printed extra service labels found in the retail lobby. Ideally, the number of tracking barcodes on a mailpiece should be limited to one that accommodates any of the available service combinations defined as part of the 3-digit Service Type Code initiative. POS One terminals should allow the customer to request the combination of desired services and the POS One terminal should print out the appropriate tracking barcode for the service.

This limits the tracking barcode to 22 digits. Routing information will continue to be printed on the postage evidencing label. The PVI printer device ID will be contained within the POS One barcode in order to facilitate uniqueness of the PVI tracking barcode. The printer device ID will be a 5-digit serial number, providing up to 99,999 unique barcodes per POS One terminal per day.

The APC barcode will include concatenated routing information. Initially, a 5-digit routing ZIP Code will be used, as individual customers who present their packages often do not always know the full 9-digit destination ZIP Code. APC customers shipping Certified Mail will not have the routing barcode printed on their letter mail items because space considerations often do not allow room for the inclusion of the destination ZIP Code as part of the barcode.

The IM™ Package Barcode for Retail Mailers carries a data payload of up to 34 digits composed of the following elements:

Table 23: IM™ Elements of a Package Barcode for Retail Mailers

Type	Field	Field Length (in digits)	Comments
Routing Information	Postal Routing Code Application Identifier	3	Always "420" when used; must be used if Destination ZIP Code is included. Shall be suppressed from human readable text (not displayed/printed).
	Destination ZIP Code	5 or 9	APC Only; 5-digit ZIP Code only for initial deployment. ZIP Code shall be suppressed in readable text.
Tracking Information	Channel Application Identifier	2	Always "95"
	Service Type Code	3	
	Channel Identifier	1	To be assigned to each Retail System
	Device ID	6	
	Julian Date (YDDD)	4	
	Serial Number	5	
	Mod 10 Check Digit	1	
Total Data Payload		34 (maximum)	

8.9 Detailed Retail Barcode Data Constructs

Postal Service Retail Constructs (Postal Use Only)

NOTE: Human Readable strings in the following sample figures may not display valid data components (ZIP: 12345, MID: 123456789, or MOD 10 check digit 1, for e.g.) but are used to assist in understanding layout. Where the length of the data fields exceed 10 digits (zero used for the tenth digit), a “#” symbol represents the remaining numeric characters of an individual field.

Table 24: A01 - USPS Retail Construct

Format A01	USPS Retail (POS & APC)
Data Field	Field Length
“420” Postal Routing Code Application Identifier	3 digits
9-digit Destination ZIP	9 digits
“95” Channel Application Identifier	2 digits
Service Type Code	3 digits
Channel Identifier (POS or APC)	1 digit
Device ID	6 digits
Julian Date in YDDD format	4 digits
Serial #	5 digits
Mod 10 Check Digit	1 digit
TOTAL	34 digits

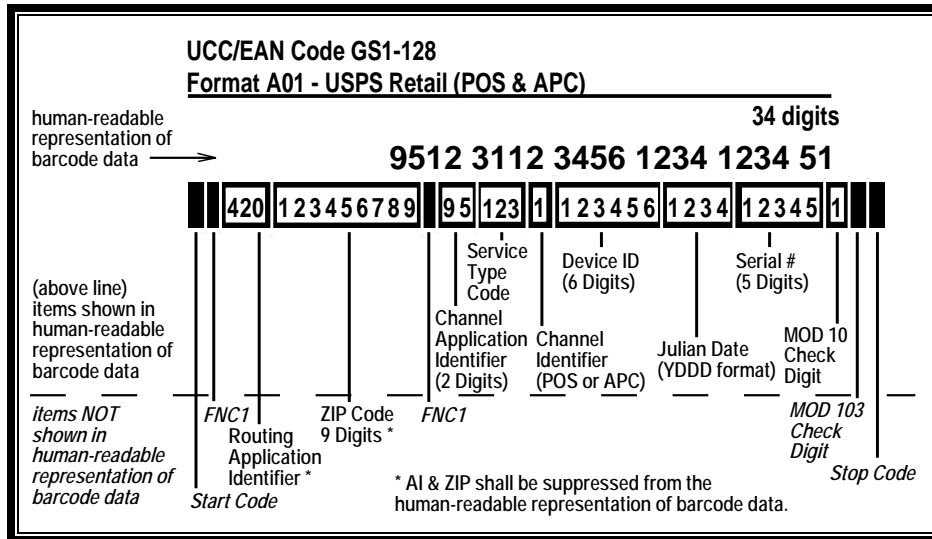


Figure 35: A01 – Visible and Non-Visible (Encoded/ Overhead) Elements

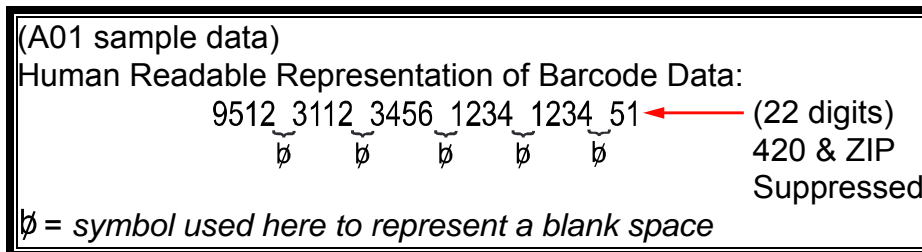


Figure 36: A01 – Parsing of the Human-Readable Data

Table 25: A02 - USPS Retail Construct

Format A02	USPS Retail (POS & APC)
Data Field	Field Length
"420" Postal Routing Code Application Identifier	3 digits
5-digit Destination ZIP	5 digits
"95" Channel Application Identifier	2 digits
Service Type Code	3 digits
Channel Identifier (POS or APC)	1 digit
Device ID	6 digits
Julian Date in YDDD format	4 digits
Serial #	5 digits
Mod 10 Check Digit	1 digit
TOTAL	30 digits

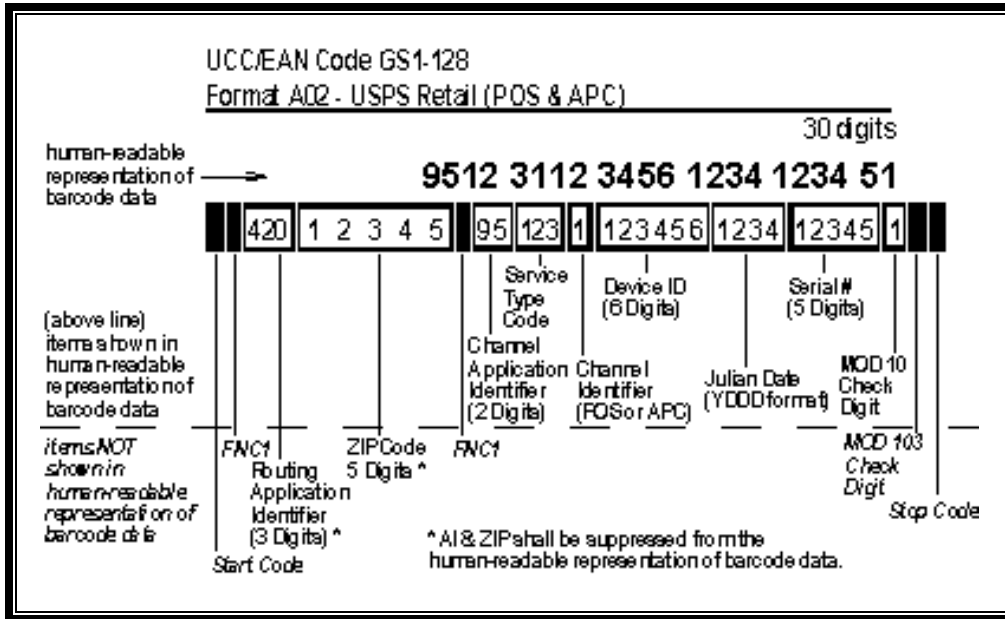


Figure 37: A02 – Visible and Non-Visible (Encoded/ Overhead) Elements

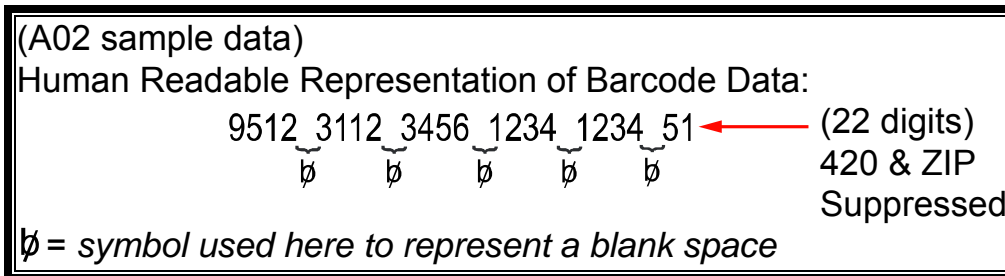


Figure 38: A02 – Parsing of the Human-Readable Data

Table 26: P02 - USPS Retail APC Construct

Format P02	USPS Retail APC (Format for Certified Letters)
Data Field	Field Length
"95" Channel Application Identifier	2 digits
Service Type Code	3 digits
Channel Identifier (to note POS or APC)	1 digit
Device ID	6 digits
Julian Date in YDDD format	4 digits
Serial #	5 digits
Mod 10 Check Digit	1 digit
TOTAL	22 digits

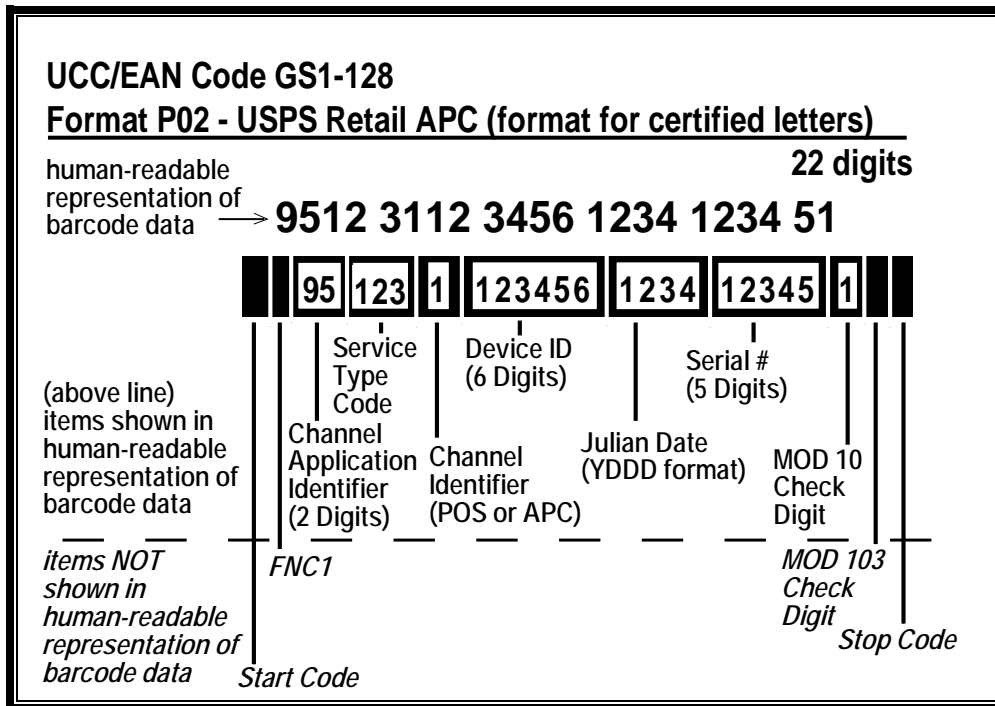


Figure 39: P02 – Visible and Non-Visible (Encoded/ Overhead) Elements

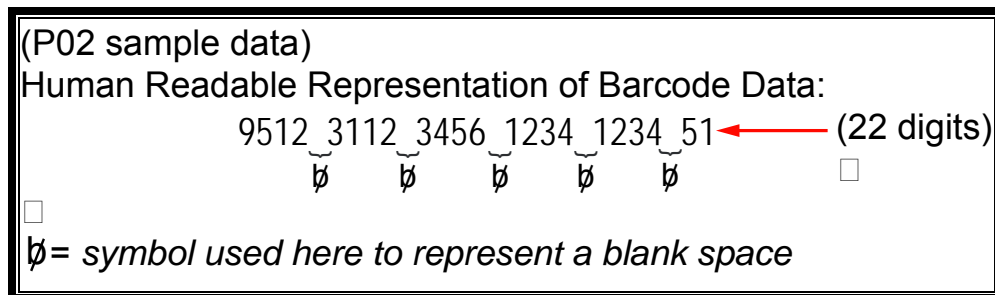


Figure 40: P02 – Parsing of the Human-Readable Data

9.0 Appendix E - Calculating the Mod 10 Check Digit

A MOD 10 check digit is used as the final digit in the IM™ Package Barcode. The calculation is based only upon the digits that make up the traditional Package Identification Code (PIC) and does not include the Postal Routing Code Application Identifier or the Postal Routing Code (when present). The following example illustrates how to calculate the MOD 10 Check Digit.

For this example the PIC is 9101 1234 5678 9000 0000 13 (used in calculations shown below).

Calculate the MOD 10 check digit using the following steps:

Step 1: Create a two-row matrix, labeled 1 through 22, 1 being the most significant position (i.e., right-most position). Starting from the least significant position of the matrix (position 22), copy each digit of the PIC all the way to position 2 (excluding the position of the check digit shown in the example below by a "?").

Table 27: Illustrative Matrix for Positions/Values in a PIC – Step 1

Position	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
PIC	9	1	0	1	1	2	3	4	5	6	7	8	9	0	0	0	0	0	0	0	1	?

Step 2: Starting from position 2 of the matrix, add the values in the even-numbered boxes.

Table 28: Illustrative Matrix for Positions/Values in a PIC – Step 2

Position	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
PIC	9	1	0	1	1	2	3	4	5	6	7	8	9	0	0	0	0	0	0	0	1	?

For the example: $1 + 0 + 0 + 0 + 9 + 7 + 5 + 3 + 1 + 0 + 9 = 35$

Step 3: Multiply the result of step 2 by 3.

For the example: $35 \times 3 = 105$

Step 4: Starting from position 3 of the matrix, add up the values in the odd-numbered boxes, skipping position 1 because it is the position of the check digit.

Table 29: Illustrative Matrix for Positions/Values in a PIC – Step 4

Position	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
PIC	9	1	0	1	1	2	3	4	5	6	7	8	9	0	0	0	0	0	0	0	1	?

For the example: $0 + 0 + 0 + 0 + 8 + 6 + 4 + 2 + 1 + 1 = 22$

Step 5: Add up the results for steps 3 and 4.

For the example: $105 + 22 = 127$

Step 6: The check digit is the smallest number which, when added to the result obtained through step 5, gives a number that is a multiple of 10.

For the example: $127 + X = 130$ therefore $X = 3$

NOTE: The dimension of the matrix (the number of cells) will vary depending on the length of the Sequential Package ID. In this example, the Sequential Package ID is 8 digits long (00000001), requiring a matrix with a total of 22 cells (including the cell for the check digit).