FedEx 2D Barcode Content Reference Guide
Version 1.5f
12 June, 2005

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Revision History

Document Name	Date	Section	Author	Description of changes and rationale
2d_spec_v13	04JULY02	ALL	O.P. Skaaksrud	First version of document
2d_spec_v13	09JULY02	ALL	O.P. Skaaksrud	Updated 2D content to reflect correct use of control character. Added second 2D Service Specific format for Express International Export to support SED statement.
2d_spec_v13	19AUG02	4-7.4	O.P. Skaaksrud	Modified 2D content to clearer show default 06 format Z-values and connection with 01 ANSI standard and 01 format for Express and Ground.
2d_spec_v13	12SEP02	4,6, and 7	O.P. Skaaksrud	Sections 4, 6 and 7 rewritten to incorporate FedEx Ground recommendations.
2d_spec_v13	30SEP02	4-8	O.P. Skaaksrud	Sections 4-8 modified to reflect FedEx Ground requirements and support secondary 2D field for EMEA VISA Manifest
2d_spec_v14	14MAR03	5–10	O.P. Skaaksrud	Clarifications of specifications. More detailed discussion of fields. Added GHAZ02 which replaced GHAZ01.
2d_spec_v15	15APR03	5-10	O.P. Skaaksrud	See Appendix 10.5 for revision overview.
2d_spec_v15a	17APR03	5-10	O.P. Skaaksrud	Format corrections
2d_spec_v15b *Production Release SEP03 Load*	29APR03	6.4-6.6	O.P. Skaaksrud	GD001, GH001, GI001 17Z added as mutually exclusive field with 21Z.
2d_spec_v15c_draft	04JUN03	6.2-6.7	O.P. Skaaksrud	GD001, GH001, GI001 replaced by GD002, GH002, GI002. ED001 replaced by ED002. EI001 replaced by EIO01 and EII01. Changes required supporting new Z-field for address correction. The new field, 26Z, replaces 21Z. For a complete list of revisions, see Appendix 10.6.
2d_spec_15d_draft – version A	08AUG03	5.1 6 7	O.P. Skaaksrud	5.1 Discussion of Select 01 Fields – added verbiage to clarify use of SCAC for Ground usage. Added 10Z and two 99Z definitions for IDF/PDF
2d_spec_15d *Production Release JAN04 Load*	29AUG03	8.2	O.P. Skaaksrud	Section showing relationship and usage of definitions added as 8.2.
2d_spec_15e	13FEB04	See Appendix	O.P. Skaaksrud	See Appendix for overview
2d_spec_15f		See Appendix	O.P. Skaaksrud	See Appendix for overview

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1 Introduction

The bar code has been pivotal to Federal Express since the introduction of the ASTRA. Sort operations, custodial control and customer package tracking have been key competitive advantages enabled by the linear bar code which all contributed to making FedEx the leader in the transportation industry. The introduction of a new machine-readable standard for FedEx holds equally high potential. Part of the Common Label initiative, the 2D field within the new label formats for FedEx Express and FedEx Ground holds the key to further differentiate our service and increase the benefits to our customers.

The 2D field is using the industry standard PDF417 as the symbology. The data content adheres to the ANSI MH10.8.3 standard that makes adaptation of the new bar code easier for our customers and trading partners.

FedEx Ground was an early adopter of the PDF 417 symbology and continues to expand features supported through the 2D with the introduction of the new Common Label format. The Common Label 2D implementation supports both the new and the legacy FedEx Ground 2D data format. Data capture applications will be backwards compatible similar to how FedEx Express supports earlier ASTRA versions.

This document provides an introduction to the PDF417 bar code and the ANSI MH10.8.3 standard data formats used for the new specification. After introducing the framework this provides for the new machine-readable field, the 2D message format for FedEx Express and FedEx Ground is reviewed. Then the process for updating and maintaining the flexible data format is discussed, and finally the FedEx Express and FedEx Ground specific data contents.

2 The 2D Symbology - PDF417

PDF417[1] is a high-density two-dimensional (2D) alphanumeric bar code symbology that essentially consists of a series of stacked linear bar codes. The symbology is capable of encoding the entire 255-character ASCII data set. PDF stands for "**P**ortable **D**ata **F**ile" and the symbology can encode up to 2,725 characters in a single symbol. The error correction level and the application's requirements reduce the effective data capacity of the symbol.

The format specified by FedEx allows multiple symbols to be "chained" (see 4.4.1 Additional 2D Fields) which make the total machine-readable capacity a function of how many symbols are used. The primary 2D symbol has however been limited to 500 bytes by FedEx. This because this field is included on the main shipment label, and space limitations dictates maximum data capacity of the field.

 The complete PDF417 specification provides many encoding options including data compression options, error detection and correction options, and variable size and aspect ratios.

PDF417 symbols consist of an array of code words.
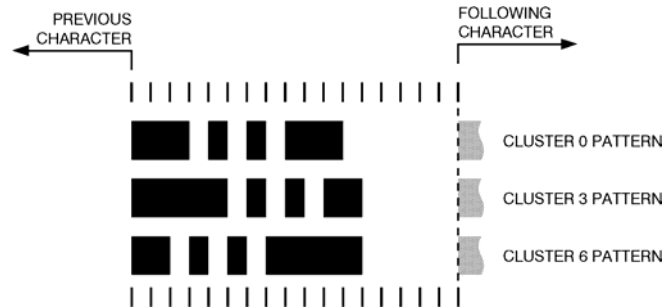
Figure 1 PDF417 Data Encoding

Code words are small bar and space patterns similar to those on a standard linear bar code. The code words are grouped and stacked on one another in a specific order to produce a complete PDF symbol. An individual PDF417 symbol consists of at least 3 rows of up to 30 code words and may contain up to 90 code words per symbol with a maximum of 928 code words per symbol. Each row contains a beginning and ending indicator to identify its location within the symbol.

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[1] The PDF-417 symbology was originally published by Symbol Technologies, Inc. to fill the need for higher density bar codes, and has since been released into public domain.
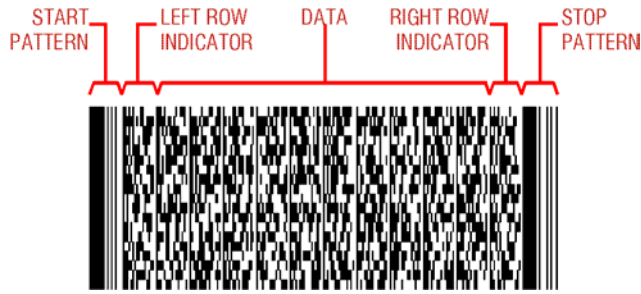
Figure 2 Key features of PDF417 Symbology

The code words in a PDF417 symbol are generated using one of the following three data compression modes. This allows more than one character to be encoded into a single code word.

EXTENDED ALPHANUMERIC COMPACTION (EXC) mode. This mode supports encoding all printable ASCII characters and can compress approximately 2 characters per code word.

BINARY / ASCII PLUS mode. Binary mode supports encoding the entire ASCII character set and can compress approximately 1.2 characters per code word.

NUMERIC COMPACTION mode can encode only the numeric characters 0 through 9. Numeric mode can compress approximately 3 characters per code word.

One or more modes can be used within a symbol by using special shift and latch characters to switch between modes within the symbol.

	Requirement
	Because different data compression modes can be used in different combinations, it is possible for symbols produced from the same data to appear very different. However, PDF symbol printed for FedEx must be 14 columns wide (12 data fields).

Data Security and Error Detection / CorrectionPDF417 also includes nine different levels of data security and error detection / correction. Each successively higher level offers increased data security, but adds additional overhead. Each PDF symbol has two code words for error detection. These function similarly to check digits in standard linear bar codes. Error correction compensates for label defects and mis-decodes. There are essentially two types of errors that can occur in a bar code symbol:

ERASURES - Missing or deleted code words.
MIS-DECODES - Errors that cause the reader to interpret a particular code word incorrectly.

The nine available error correction or security levels are numbered 0 through 8. Each higher security level allows for a higher number of erasures and mis-decodes to be recovered from.

	Take Note
	Since it takes 2 code words to recover from a mis-decode (one code word to detect the error; one to correct it) a given security level can support half the number of mis-decodes that it can un-decoded or missing code words.

Error detection and correction are encoded into additional code words. A PDF417 symbol can contain a maximum of 928 total code words for data and error correction combined. The additional code words associated with the error correction are referred to as overhead since they take up space within the symbol.

The relationship between security level, error correction capacity and the amount of overhead (expressed in number of code words) required for each security level is outlined below:

Security Level	Max. Number of Erasures	Max. Number of Misdecodes	Added Overhead (Code Words)
0	0	0	2
1	2	1	4
2	6	3	8
3	14	7	16
4	30	15	32
5	62	31	64
6	126	63	128
7	254	127	256
8	510	255	512

Table 1 Data Security Level

	Requirement
!	FedEx requires the use of security level 5 in PDF417 bar code. This makes the bar code able to recover from damages or errors in up to 31 code words.

3 ANSI MH10.8.3 Standard Data Formats

The following is an adaptation of the current ANSI MH10.8.3 documentation for the standard formats used by FedEx as part of the 2D specification.

3.1 Message Format

The message format defines how data is transferred from a 2D scanning applications to the user's applications.

Multiple data Formats can be contained within a data stream, and a two level structure of enveloping is employed. The outermost layer of the message is a Message Envelope that defines the beginning and end of the message. Within the Message Envelope are one or more Format Envelopes that contain the data. FedEx uses the two Format Envelopes 01 and 06 as part of our specification.

The Message Envelope consist of
- A Message Header,
- One or more Format Envelope(s), and,
- A Message Trailer (when required).

Each Format Envelope within the Message Envelope shall consist of,
- A Format Header,
- Data, formatted according to the rules defined for that Format, and,
- A Format Trailer (when required).
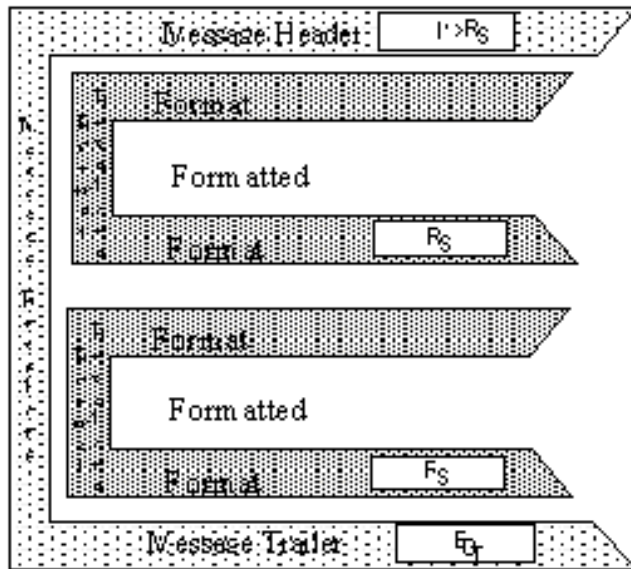
Figure 3 Enveloping Structure

3.2 Message Envelope

The Message Envelope defines the start and end of the data contained within the data stream, and provides the following functions:

Indicates the message contained within this media is formatted in compliance with the rules of this standard.
Indicates the character that has been defined to separate Formats within this Message.
Provide a unique character to indicate the end of the Message.
The structure within a data stream is as follows:

    A Message, containing one or more Formats
        A Format, containing one or more Segments
            A Segment, containing one or more Data Elements
                A Data Element (Field), potentially containing one or more Sub-elements (Sub-fields).

3.2.1 Message Header

The Message Header consists of two parts:
* the three character Compliance Indicator, and
* the Format Trailer Character

The complete Message Header is:

$[$ $)>^{R}_{S}$ (left bracket, right parenthesis, greater than, and HEX 1E).

3.2.1.1 Compliance Indicator

The Compliance Indicator is always the first three characters in the Message Header. The Compliance Indicator is defined as

`[)>` (left bracket, right parenthesis, and greater than).

3.2.1.2 Format Trailer Character

The Format Trailer Character is always the fourth character in the Message Header. The Format Trailer Character shall be the non-printable ASCII character "$^{R}_{S}$" (HEX 1E).
The Format Trailer Character is used throughout the message to indicate the end of a data Format envelope.

3.2.2 Message Trailer

The Message Trailer identifies the end of the message within the data stream. The Message Trailer is always the End Of Transaction character, "**EOT**" (HEX 04). The Message Trailer character will **<u>not</u>** be used elsewhere in the message.

3.2.3   Format Envelope

The Format Envelope defines the start and end of data in a given Format and provides the following functions:

Identifies the data Format used within the envelope,

Defines the character(s) used to separate the Segments, Data Elements (Fields), and Sub-elements (Sub-fields) within this data Format, and,

Indicates any applicable date, release, or control information.

3.2.3.1   Format Header

A Format Header shall consist of two parts:

A Format Indicator (a two-digit numeric identifier which identifies the rules governing the Format)

Variable data (if any), which defines the separators used and version and release, date, or control information of the applicable standards.

Table 2 lists the Format Indicators and variable data associated with the Format Header.

Format Indicator	Variable Header Data	Format Trailer	Format Description
01	$G_S$vv	R_S	Transportation
06	G_S	R_S	Data using FACT Data Identifiers
vv- represents the two-digit version of Format '01' being used R_S - represents the Format Trailer character G_S - represents the Data Element Separator			

Table 2 Format Indicators and variable data for Format Headers.

3.2.3.2   Separators and Terminators

The Separators and Terminators are an integral part of the data stream. The Separator and Terminator characters are not to be used in non-binary data elsewhere in the message.

3.2.3.3   Data Element Separator

Data elements in Formats "01," and "06" will be separated by the Data Element Separator, the non-printable character "G_S".

3.2.4   Format Header "01" - Transportation

The Format Header is be represented as:

$01^G{}_Svv$

where:

- $^G{}_S$ is the Data Element Separator to be used between Data Elements
- vv   represents the two-digit version assigned by ANSI MH10.8.3.

3.2.5   Format "06" (Using FACT Data Identifiers)

Each Data Element in this Format will be preceded by the appropriate FACT Data Identifier (DI) code and followed by the Data Element Separator character "$^G{}_S$" unless the data element is the last field in the data Format, i.e., the last Format "06" data element is followed by the Format Trailer Character "$^R{}_S$"

3.3   Format "01" Carrier Sortation and Tracking (Transportation)

Format '01' consists of two areas: the first is mandatory data which is common to all carrier sortation and tracking applications, the second area is optional data which may be useful to specific applications between trading partners.

If more than one Format is included in a Message, Format '01', if used, will always be the first Format in the Message.

The organization controlling the data structure within this format is identified through the version indicator in the Format Header. At the time that the current standard was published the following versions had been identified.

Version '02' - Formatted according to the rules of ANSI MH10/SC 8 (using measurement qualifiers of pounds ["LB"] and kilograms ["KG"])
Version '06' - Formatted according to the rules of the International Air Transport Association (IATA)
Version '56' - Formatted according to the rules of International Federation of Freight Forwarders Association (FIATA)
Version '96' - Formatted according to the rules of ANSI MH10/SC 8 (using measurement qualifier of pounds only)

FedEx Ground is currently using version '96'. The new standard for Federal Express will be version '02'.

3.3.1 Mandatory Data

This data is required within the "01" Format. The following Data Elements are to be ordered as listed below, immediately following the Format Header. Each Data Element is defined as either fixed or variable length. Where Fields are variable in length the minimum Field length and the maximum Field length (min...max) are shown below.   All Fields are separated by the Data Element Separator character ("$^{G}_{S}$") defined in the Format Header.

Ship To Postal Code   (an, 00 - 11)
Ship To Country Code (ISO 3166)   (n, 03)
Class of Service (Assigned by carrier)   (an, 01 - 03)
Tracking Number (controlled by carrier)   (an, 01 - 20)
Origin Carrier SCAC (an, 02 - 04)

(Standard Carrier Alpha Code (SCAC) of the carrier intended to transport the package)

3.3.2 Optional Data

There are nine optional Data Elements. Optional Data Elements, if used, shall immediately follow Mandatory Data, in the order specified below. Each Data Element is defined as either fixed or variable length. Where Fields are variable in length the minimum Field length and the maximum Field length (min...max) are shown below. All optional Fields, including blank ones, are to be separated by the Data Element Separator character ("$^{G}_{S}$").

Data that has been identified as Optional Data may not be needed in all applications. The Optional Data fields and associated lengths are shown below:

Carrier Assigned Shipper ID (pick-up Location)   (an, 01 - 10)
Julian Day of Pickup (n, 03)
Shipment ID Number (an, 01 - 30)
n/x (container n of x total containers)(n, 01-04 / n 01-04)
Weight ("LB" or "KG") (decimal is a character if used)   (r, 01-08, a02)
Cross match (value is **Y** or **N**)(a, 01)
Ship To Street Address   (an, 01-35)
Ship To City   (an, 01-35)
Ship To State/Province   (an, 02)
Ship To Name (an, 01-35)

The weight qualifier is appended directly to the value without an intervening space and is in uppercase letters. An example of this format would be if shipment weight is 117.6 kilograms, this data stream would appear as 117.6KG

4 2D Design Approach for FedEx Express and FedEx Ground

The 2D field has been designed with easy of use and flexibility as the core requirements. By building the record layout around an industry standard format, a majority of the data content can be extracted and parsed by any user whose application adhere to the standards defined in ANSI MH10.8.3[2]. A more complete discussion of FedEx's adaptation of these standards follows in Section 6 of the standard.

The FedEx 2D field contains data in three separate formats, where only the third is a pure FedEx specific format. Even so, it still can be read by scanning applications that use the ANSI MH10.8.3 standard. The three components are

- Shared Data (Corporate Common)
- Company Specific Data
- Service Specific Data

The data in the default 2D field is distributed roughly according to Figure 4.
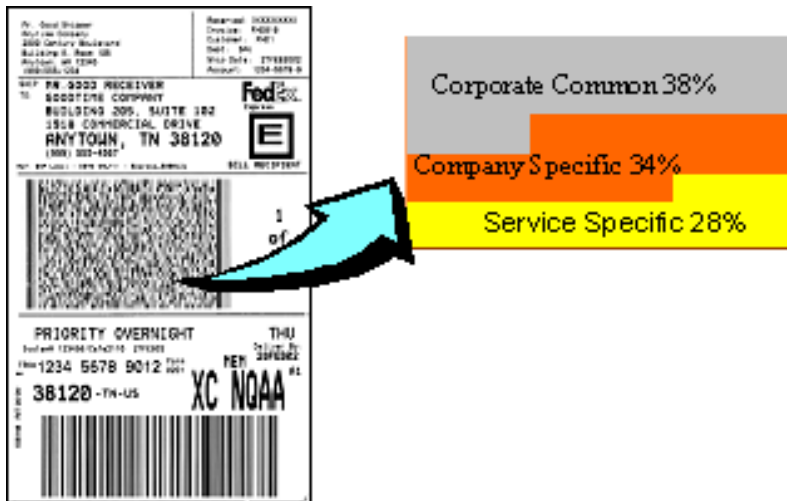
Figure 4 Distribution of 2D Capacity

The three components follow the format of the ANSI specifications outlined in Section 3 of this document. The message header $[\,)>^R{}_S$ (left bracket, right parenthesis, greater than, and HEX 1E) and message trailer encloses the message. The Message Trailer identifies the end of the message within the data stream. The Message Trailer is always the End Of Transaction character, **"EOT"** (HEX 04). The Message Trailer character will **not** be used elsewhere in the message.

It is imperative that Section 3 of this document is understood and how the overall 2D structure applies to the company specific sections.

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[2] ANSI MH10.8.3 and formats used are further discussed in Section 3. For complete documentation of the proposed standard format see http://www.mhia.org/mh10/sc8/Documents/dmh10-8-3.pdf

5 Corporate Common - FedEx 01 Transportation Format

This section of the 2D field is based on Format 01, version 02. Following the message header, format 01 must be the first section in the 2D field. Note that the maximum field lengths have been lowered from the ones specified in MH10.8.3 for some of the fields. This is still within specification and a limitation placed on applications within FedEx. All capture devices should be programmed to the maximum size of any field.

Both FedEx Express and FedEx Ground will share the same fields in this portion of the 2D field although data content will differ as a function of the OpCo's different operations.

Description	Required[3]	OH	Data Format	Data Length Express	Data Length Ground
Format Envelope Header (Carrier Data 01)		5	01 ^G_S 02		
Ship to Postal Code ^G_S	M	1	(an, 3-11)	11	11
Ship to Country Code ^G_S	M	1	(n, 3)	3	3
Class of Service (assigned by carrier) ^G_S	M	1	(an, 1-3)	3	3
Tracking Number (assigned by carrier) ^G_S	M	1	(an, 1-20)	16	15 or 20[4]
Origin Carrier SCAC ^G_S	M	1	(an, 2-4)	4	4
Pickup Location (carrier assigned shipper ID) ^G_S	M/C[5]	1	(an, 1-9)	9	7
Julian Pickup Date ^G_S	M/O[6]	1	(n, 3)	3	3
Shipment ID Number (shipper) ^G_S	O	1	(an, 1-30)	0	30
Container n of total of x ^G_S	O/C[7]	1	(n, 1-4/n,1-4)	9	9
Weight (Lb or Kg) decimal is a character if used ^G_S	O	1	(r 1-8,a2)	10	10
Cross match Postal Code to State (Y or N) ^G_S	M	1	(a, 1)	1	1
Ship to Street Address Line1 ^G_S	M	1	(an, 1-30)	30	30
Ship to City ^G_S	M	1	(an, 1-30)	30	30
Ship to State/Province ^G_S	M	1	(an, 2)	2	2
Ship to Name Line 1	M	0	(an, 1-30)	30	30
Format Separator, ^R_S		1			
		20		161	193
01 Format Data Content (bytes)				181	213

Table 3 Default FedEx Shared Data (Corporate Common)

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[3] Data element is either Mandatory (M), Optional (O), or Conditional (C)

[4] FedEx Ground Tracking ID uses 15; SSCC-18 uses 20.

[5] Mandatory for all Express labels, Conditional for Ground. Required for Ground if SSCC-18 Tracking ID is supplied; not required if a FedEx Ground Tracking ID is supplied.

[6] Mandatory for Express, Optional for Ground

[7] Mandatory for FedEx Ground International

"Ship to Street Address Line1" and "Ship to City" are (an,1-35) in the ANSI specification and both are truncated to a maximum of 30 bytes for FedEx Express and FedEx Ground. All fields are required. Individual fields are separated by the non-printable character "^G_S" (decimal 29, HEX 1D), as indicated in the "Data Field Name". This is counted as overhead for the field. Total overhead for the format envelope includes header, format separator and field separators. Total overhead is 20 bytes.

5.1 Discussion of Select 01 Fields

SCAC Code - The SCAC code for FedEx Express is "FDE". For FedEx Ground the current SCAC codes are "RPSB" used with FXG Linear (or 96) bar code, or "RPSC" used with SSCC-18 bar code. The FedEx Ground PDF-417 symbol is not intended to be a stand alone symbol, and specific fields in the symbol are used to link it with the FedEx Ground "96" bar code or the UCC/EAN SSCC-18 bar code. Either of these symbols can be used for high-speed automated sortation.

	Requirement **The SSCC-18 cannot be used as the only bar code on a FedEx Ground Label. Must be accompanied by 2D or FedEx Ground "96" bar code.** The SSCC-18 is a twenty-digit UCC/EAN 128 bar code. Because the application identifiers allow these codes to be identified automatically, FedEx Ground restrictions on the presence of other bar codes can be relaxed. Shippers can now have complete flexibility as to how many symbols appear on the package.

When used in conjunction with the SSCC-18 bar code, the SSCC-18 Pickup Location (carrier assigned shipper ID) and Tracking Number must be encoded in the appropriate fields within the PDF-417 symbol.

In order for FedEx Ground systems to accept the proper bar code combinations, it is important to provide some indication of which symbols are present on the package.

DIFFERENT STANDARD CARRIER NUMERIC CODES (SCNC) and STANDARD CARRIER ALPHA CODES (SCAC) have been assigned to indicate if more than one symbol is required; and if so, which ones. The standard carrier codes for FedEx Ground to be used for each possible bar code combination are listed below.

Primary Symbol	SCNC	Secondary Symbol	SCAC
FedEx Ground "96" Code 128	11	None	N/A
FedEx Ground "96" Code 128	13	UCC/EAN- 128 SSCC-18	N/A
FedEx Ground "96" Code 128	12	FedEx GROUND PDF-417 "2D"	RPSB
UCC/EAN -128	N/A	FedEx GROUND PDF-417	RPSC

Primary Symbol	SCNC	Secondary Symbol	SCAC
SSCC-18		"2D"	

Note the SCNC is used in the FedEx Ground "96" bar code. The SCAC is used in the PDF-417 "2D" symbol. Neither the SCAC nor SCNC is used in the SSCC-18 bar code.

Pickup Location – For FedEx Express shipments use the FedEx Express account number (9 digits), and for FedEx Ground use the FedEx Ground account number (7 digits).

Tracking Number (assigned by carrier) – For FedEx Express, this field includes both the tracking number and the form. Format used is 12 digit tracking number followed by 4 digit form id. The right four digits will be the form id. Form ID will be 'forced' into a 4-byte representation. If it is less than 4 bytes; the available bytes will be zero-padded on the left to create 4 bytes. The 4-bytes represented by the FORM ID will be concatenated on the end of the tracking number starting at the right-most byte and working to the left.

Shipment ID Number – Only populated for FedEx Ground. The Shipment ID will contain the data that is currently in the Shipment ID field in the automation device.

Weight – Weight of the package shipped. For MPS shipments, the weight of each package (child and master) will be encoded as individual shipments.

Cross Matched Postal Code to State – Address verification flag. The postal code (ZIP code) has been matched to the state.

6 Company Specific Data

The second component is based on Format 06 in ANSI MH10.8.3. This is a FACT-based format that allows for a mix of applications-specific fields (starting at 10Z) and standard-defined fields (see Table 4). In this format, all application specific fields must be defined for all scanning and label printing applications. Using this functionality, the FedEx standard defines 10Z as the record header, which in turn defines all Format 06 fields from 11Z through 99Z.

The 10Z header is defined as:

ABnnn,

where

A represents the OpCo, ie. E for FedEx Express; G for FedEx Ground
B represents the category of Company Specific Data for each OpCo, i.e. D for Domestic; I for International; H for Home
nnn is the version number of the AB combination (can also be alpha).

The following default header records are defined:

ED002 – FedEx Express Domestic
EII01 – FedEx Express International, US Inbound
EIO01 – FedEx Express International, US Outbound
EIP01 – FedEx Express IPD/IDF
GD002 – FedEx Ground Domestic
GI002 – FedEx Ground International
GH002 – FedEx Ground Home Delivery

The 10Z field MUST be the first field in the 06 section since it defines all other fields. Other fields can be included in any order. If an optional field defined in a specific format is not populated, it can be left out. This portion of the 2D field is dedicated to OpCo specific fields that were not included in the first section of the symbol. Each OpCo may have several versions of this portion of the field based on the label's function. When a new format is released, it will replace the old version. For example, if a new version for "FedEx Express domestic" is released, it will have a different header record. Typically, "ED002" would replace "ED001". It will always be a unique identifier. The automation device will only generate <u>one version</u> of each OpCo specific record layout. Scanning applications on the other hand have to support all released header records to allow for backwards compatibility. The same applies to 99Z records.

The combination of fields defined by the 10Z header directly defines the maximum size available to the 99Z field(s).

11Z through 98Z are available for definition and for the default formats with header record xxnnn. The Z-values 11-98 will not be reused, and will remain the same for FedEx Express and FedEx Ground although the implemented length of the field may vary. Multiple 99Z fields may be used in one bar code provided the header information of the 99Z uniquely identifies the record content. Table 4 shows the currently defined Z-values.

6.1 Z-Value and FACT Definitions

The following FACT and "Z" values have been defined for all default header records indicated as Default:

DI	Description	OH	Data Format	Express	Ground
				Data Length	
10K	Invoice Number ^G_S	4	(an, 1-20)	20	20
9K	Generic Transaction Reference Code (internally assigned or mutually defined) ^G_S	3	(an, 1-20)	20	20
K	Order Number assigned by Customer to identify a Purchasing Transaction (e.g., PO Number) ^G_S	2	(an, 1-20)	20	20
10Z	Header Information ^G_S	4	(an,5)	5	5
11Z	Ship To – Name Line 2 ^G_S	4	(an, 1-30)	30	30
12Z	Ship To – Contact Phone Number ^G_S	4	(n, 1-14)	14	14
13Z	4-digit Handling Code ^F_S Individual 2-digit Handling Codes ^G_S	5	(n,4),(an,0-16)	20	20
14Z	Ship To – Address Line 2 ^G_S	4	(an, 1-30)	30	30
15Z	Meter# ^G_S	4	(an, 1-7)	7	7
16Z	Secondary Label Flag ^G_S	4	(an, 4)	4	4
17Z	Ship To - Location Number – As defined by the recipient organization (e.g., Store Number, etc.) ^G_S	4	(an,1-10)	10	10
18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground: EX = Express account number or GR = Ground account number) ^G_S	5	(n 1-9, an 2)	11	11
19Z	Acknowledgment of Delivery (AOD) Flag ^G_S	4	(an, 1)	1	1
20Z[8]	COD Value ^F_S Declared Value ^G_S	5	(r,1-10), (n,1-6) EX (r,1-8), (n,1-5) GR	16	13
21Z	Check Digit ^G_S	4	(an,4)	4	4
22Z	OS1/OS2/OS3 Indicator ^F_S Add. Handling Flag ^G_S	5	(an,1), (an, 1)	2	2
23Z	Residential Flag ^G_S	4	(an, 1)	1	1
24Z	Release Type ^F_S Release Number ^G_S	5	(a,1),(n,10)	11	11
25Z	COD Check Type ^F_S COD Payment Type ^G_S	5	(a,1),(an,1-2)	3	3
26Z	Check Digit ^F_S Address Check Code ^G_S	5	(an,4), (an, 0-2)	6	6
99Z	Service Specific Information ^G_S	4	(an,1-varies)		

Table 4 Default FACT Identifiers for FedEx Company Specific Record

Note that all "Z" values do not have to be used in the record. Unlike Format 01, the field is only in use when the FACT identifier is used. See the specific OpCo's 2D specifications for more details. Default identifiers have a maximum length as noted in the table above. Data elements are only used if the application requires it. If a defined field has no value, it does not need to be included. If a field contains multiple values such as 18Z, both fields must be included with the delimiter even if one value is set to null. The record can contain multiple 99Z values since they are uniquely identified in the 99Z header.

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[8] COD Value field for Express increased from max of 8 to 10 bytes.

For all records where the default identifiers or fields are used in the 06 section, the purpose of the other components of the header records is mostly for the label generation side and are of limited value to the scan capture application. The header information will identify which combination of default fields is used which in turn determines the maximum length of the service specific field 99Z.

Six 10Z records have been defined. Both FedEx Express and FedEx Ground have 10Z records specialized for Domestic and International. In addition, FedEx Ground has a Home Delivery specific 2D record layout.

Label generating applications will use the latest release of each record definition, while scanning applications will support all released record definitions.

Unless defined otherwise, monetary fields will have an explicit decimal point.

6.1.1   Discussion of Fields

K – Reference field for use by the customer. Typically populated with PO# or other shipper reference value. This is the only shared customer reference field currently in use in both FedEx Express and FedEx Ground record definitions. It is the default value for FedEx Express for reference information provided by the customer. The Reference field will contain data that is currently in the "Your Reference/Customer Reference" field in the automation device.

9K – Reference field for use by the customer. Default for FedEx Ground is "Customer Reference Value".

10K – Reference field for use by the customer. Default for FedEx Ground is "Invoice Number".

FedEx Ground Business Rules for Reference Numbers in the 2D Format
Because the 2D format is limited to one reference number, the following business rules will be used to determine which reference field (K, 9K, or 10K) will be populated in the 2D. The following rules should be used when populating the 2D in the following 10Z FedEx Ground records - FedEx Ground Domestic, FedEx Ground International, and FedEx Ground Home Delivery: 1. If any of the reference fields supplied by the customer/platform is the Customer Reference Number, the 9K field will be placed in the 2D format. 2. If none of the reference fields is the Customer Reference Number, and the PO Number has been supplied, then the K field will be placed in the 2D format. 3. If neither the Customer Reference Number or the PO Number is supplied, and the Invoice Number has been supplied, then the 10K field will be placed in the 2D format.

10Z – Header Information. Defines the fields included in the record.

11Z – Ship To – Name Line 2. Second name line, i.e. company name.

12Z – Ship To – Contact Phone Number.

13Z – Handling Code. Two-part field. Currently used only for FedEx Express. First 4 bytes are the ASTRA Handling Code, calculated the same way as the handling code in the ASTRA to allow for backwards compatibility.   The remaining 16 bytes are the concatenation of all pertinent handling codes. The field size will allow for up to 8 handling codes. The handling codes will be listed in numeric order. The handling codes used are the 2-digit handling codes defined for use by contract events and CHRONOS revenue events. These codes are listed at the end of this document. If there are no handling codes required, the field will not be included in the 06 segment.

14Z – Ship To – Address Line 2.

15Z – Meter#

16Z – Secondary Label Flag, indicates if there is a second 2D field included with the shipment and the category of information held by this field. Used by scanning applications to determine if they need to capture the second 2D field. This field is only required if a secondary 2D field is used.

17Z – Ship To - Location Number – As defined by the recipient organization (e.g., Store Number, etc.). Customer specific values in use by FedEx Ground.

18Z – "3rd Party or Bill Recipient Account Number" and "Account Qualifier. Account Qualifier Values:
Express: E3 = 3rd Party and E2 = Bill Recipient.
FedEx Ground: EX= Express account number or GR = FedEx Ground account number (EX or GR)

19Z – Acknowledgment of Delivery (AOD) Flag. Field values "Y" or "N"

20Z – "COD Value" and "Declared Value". The COD currency default is the destination country. "COD Value" can be blank. The Declared Value currency default is the origin country. The data format for COD is a radix floating decimal which basically indicates that a decimal can be placed for tenths, hundredths, or not at all.

21Z – Check Digit – validates the data content has not been altered. Used only for FedEx automation platforms.

22Z – "OS1/OS2/OS3 Indicator" and "Add. Handling Flag". This field is conditional on whether any of the services for Additional Handling, Oversize1, Oversize2, or Oversize3 are selected. Oversize1 will be designated as "1", Oversize2 will be designated as "2", and Oversize3 as "3".   If not oversized, leave empty. The "Additional Handling Flag" is "Y" or "N".

23Z – Residential Flag. Field values "Y" or "N"

24Z – "Release Type" and "Release Number". Currently, used only for FedEx Express. Valid values for "Release Type": S (Shipper), R (Recipient)

25Z – "COD Check Type" and "COD Payment Type". Currently, used only for FedEx Express.
Valid values for COD Check Type: S (Secured), U (Unsecured)
Valid values for COD Payment Type: C (Cashier), M (Money), P (Personal), O (Other)

26Z – Check Digit – validates the data content has not been altered, and Address Check Code. Used only for FedEx automation platform.

99Z – Service Specific Information. See Section 7 for complete description.

In some cases, specific considerations, dependencies or definitions are included in the use of these fields. In those cases, the fields will be discussed in more detail in the corresponding Company Specific Record Section of the definition.

6.2 FedEx Express Domestic – ED002

The 10Z record definition for FedEx Express Domestic. This record definition does not have a 99Z defined. The 2D for FedEx Express Domestic is limited to 450 bytes due to the Address bar code space requirement.

DI	Description	Required	OH	Data Format	Data Length
	Format Envelope Header		3	06 ^G_S	
10Z	Header Information (ED002) ^G_S	M	4	(an,5)	5
11Z	Ship to Name2 ^G_S	O	4	(an, 1-30)	30
12Z	Ship to Phone Number ^G_S	O	4	(n,1-14)	14
13Z	4-digit Handling Code ^F_S Individual 2-digit Handling Codes ^G_S	M	5	(n,4),(an,0-16)	20
14Z	Ship to Address Line 2 ^G_S	O	4	(an, 1-30)	30
15Z	Meter # ^G_S	M	4	(an, 1-7)	7
16Z	Secondary Label Flag ^G_S	M	4	(an,4)	4
18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground: EX = Express account number or GR = Ground account number) ^G_S	C	5	(n 1-9, an 2)	11
20Z	COD Value ^F_S Declared Value ^G_S	C	5	(r,1-10), (n,1-6)	16
24Z	Release Type ^F_S Release Number ^G_S	C	5	(a,1),(n,10)	11
25Z	COD Check Type ^F_S COD Payment Type ^G_S	C	5	(a,1),(an,1-2)	3
26Z	Check Digit ^F_S Address Check Code ^G_S	O	5	(an,4), (an, 0-2)	6
K	Order Number assigned by Customer to identify a Purchasing Transaction (e.g., PO Number) ^G_S	O	2	(an, 1-24)	24
	Format Trailer, ^R_S	M	1	^R_S	
			60		181
	"06"Format Total				241

Table 5 FedEx FedEx Express Domestic 10Z Record, Header ED002

6.2.1 Revision History

ED001 to ED002: 21Z replaced by 26Z field. Adds two bytes field for address check code.
20Z – "COD Value" field increased from max of 8 to 10 bytes.

6.3   FedEx Express International, US Inbound/Non-US Export – EII01

The 10Z record definition is for FedEx Express International, US Inbound/Non-US Export. Valid 99Z definitions are EI0001 or none.

DI	Description	Required	OH	Data Format	Data Length
	Format Envelope Header		3	06 ^G_S	
10Z	Header Information (EII01) ^G_S	M	4	(an,5)	5
11Z	Ship to Name2 ^G_S	O	4	(an, 1-30)	30
12Z	Ship to Phone Number ^G_S	O	4	(n,1-14)	14
13Z	4-digit Handling Code ^F_S Individual 2-digit Handling Codes ^G_S	M	5	(n,4),(an,0-16)	20
14Z	Ship to Address Line 2 ^G_S	O	4	(an, 1-30)	30
15Z	Meter # ^G_S	M	4	(an, 1-7)	7
16Z	Secondary Label Flag ^G_S	M	4	(an,4)	4
18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground: EX = Express account number or GR = Ground account number) ^G_S	C	5	(n 1-9, an 2)	11
26Z	Check Digit ^F_S Address Check Code ^G_S	O	5	(an,4), (an, 0-2)	6
K	Order Number assigned by Customer to identify a Purchasing Transaction (e.g., PO Number) ^G_S	O	2	(an, 1-24)	24
99Z	Service Specific Information	O	3	(an, 1-91)	91
	Format Trailer, ^R_S		1	^R_S	
			48		242
	"06"Format Total				290

Table 6 FedEx Express International 10Z Record, Header EII01

6.3.1   Revision History

1. EI001 transition to EII01 and EIO01
    a. EI001 replaced by two new definitions for FedEx Express International: EII01 and EIO01. Using two different definitions for International to avoid reserving space for the largest defined 99Z record (EI0002).
    b. Added 26Z field.
    c. Correction to the 99Z field based on summing error of EI0001 total. Was incorrectly summed to 84, should be 91.

6.4 FedEx Express International, US Outbound/US Export – EIO01

The 10Z record definition is for FedEx Express International, US Outbound/US Export.
Valid 99Z definition is EI0002.

DI	Description	Required	OH	Data Format	Data Length
	Format Envelope Header		3	06 ^G_S	
10Z	Header Information (EIO01) ^G_S	M	4	(an,5)	5
11Z	Ship to Name2 ^G_S	O	4	(an, 1-30)	30
12Z	Ship to Phone Number ^G_S	O	4	(n,1-14)	14
13Z	4-digit Handling Code ^F_S Individual 2-digit Handling Codes ^G_S	M	5	(n,4),(an,0-16)	20
14Z	Ship to Address Line 2 ^G_S	O	4	(an, 1-30)	30
15Z	Meter # ^G_S	M	4	(an, 1-7)	7
16Z	Secondary Label Flag ^G_S	M	4	(an,4)	4
18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground: EX = Express account number or GR = Ground account number) ^G_S	C	5	(n 1-9, an 2)	11
26Z	Check Digit ^F_S Address Check Code ^G_S	O	5	(an,4), (an, 0-2)	6
K	Order Number assigned by Customer to identify a Purchasing Transaction (e.g., PO Number) ^G_S	O	2	(an, 1-24)	24
99Z	Service Specific Information	O	3	(an, 1-124)	124
	Format Trailer, ^R_S		1	^R_S	
			48		275
	"06"Format Total				323

Table 7 FedEx Express International 10Z Record, Header EIO01

6.4.1 Revision History

EI001 replaced by two new definitions for FedEx Express International: EII01 and
EIO01. New definitions for FedEx Express International are EII01 and EIO01. Using
two different definitions for International to avoid reserving space for the largest defined
99Z record (EI0002). Added 26Z field.

6.5 FedEx Express International, IPD/IDF – EIP01

The 10Z record definition is for FedEx Express International, IPD/IDF shipments. Valid 99Z definitions are EIP001 for non-US export (all international shipments not originating in the US), and EIP002 for US export shipments.

DI	Description	Required	OH	Data Format	Data Length
	Format Envelope Header		3	06 ^G_S	
10Z	Header Information (EIP01) ^G_S	M	4	(an,5)	5
11Z	Ship to Name2 ^G_S	O	4	(an, 1-30)	30
12Z	Ship to Phone Number ^G_S	O	4	(n,1-14)	14
13Z	4-digit Handling Code ^F_S Individual 2-digit Handling Codes ^G_S	M	5	(n,4),(an,0-16)	20
14Z	Ship to Address Line 2 ^G_S	O	4	(an, 1-30)	30
15Z	Meter # ^G_S	M	4	(an, 1-7)	7
16Z	Secondary Label Flag ^G_S	M	4	(an,4)	4
26Z	Check Digit ^F_S Address Check Code ^G_S	O	5	(an,4), (an, 0-2)	6
K	Order Number assigned by Customer to identify a Purchasing Transaction (e.g., PO Number) ^G_S	O	2	(an, 1-24)	24
99Z	Service Specific Information	M	3	(an, 1-97)	97
	Format Trailer, ^R_S		1	^R_S	
			43		237
	"06"Format Total				280

Table 8 FedEx Express International IPD/IDF 10Z Record, Header EIP01

6.5.1 Revision History

EIP01 was added as a new definition for the January 2004 load to support IPD/IDF. No new fields were added with the new definition.

6.6 FedEx Ground Domestic – GD002

The valid 99Z fields are GHAZ02 or GRET01. This record definition will also be used for intra-Canadian shipments.

DI	Description	Required	OH	Data Format	Data Length
	Format Header		3	06^G_S	
10Z	Header Information (GD002) ^G_S	M	4	(an,5)	5
16Z	Secondary Label Flag ^G_S	O	4	(an, 4)	4
11Z	Ship To – Name Line 2 ^G_S	O	4	(an, 1-30)	30
12Z	Ship To – Contact Phone Number ^G_S	C	4	(n, 1-14)	14
14Z	Ship To – Address Line 2 ^G_S	O	4	(an, 1-30)	30
17Z	Ship To - Location Number – As defined by the recipient organization (e.g., Store Number, etc.) ^G_S	O	4	(an,1-10)	10
18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground: EX = Express account Number or GR = Ground account number) ^G_S	C	5	(n 1-9, an 2)	11
23Z	Residential Flag ^G_S	C	4	(an, 1)	1
22Z	OS1/OS2/OS3 Indicator ^F_S Add. Handling Flag ^G_S	C	5	(an,1), (an, 1)	2
26Z[9]	Check Digit ^F_S Address Check Code ^G_S	O	5	(an,4), (an, 0-2)	6
20Z	COD Value ^F_S Declared Value ^G_S	C	5	(r,1-8), (n,1-5)	14
19Z	Acknowledgment of Delivery (AOD) Flag ^G_S	C	4	(an, 1)	1
K	Order Number assigned by Customer to identify a Purchasing Transaction (e.g., PO Number) ^G_S	O	4	(an, 1-20)	20
9K	Generic Transaction Reference Code (internally assigned or mutually defined) ^G_S	O		(an, 1-20)	
10K	Invoice Number ^G_S	O		(an, 1-20)	
99Z	Service Specific Information (GHAZ02, GRET01, or none)		3	(an,1-86)	86
	Format Trailer, ^R_S		1	^R_S	
			63		234
	"06"Format Total				297

Table 9 FedEx Ground Domestic 10Z Record, Header GD002

6.6.1 Revision History

GD001 – GD002: Replace 21Z with new 26Z field.

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[9] Mutually exclusive with 17Z. Only used for customer automation generated labels.

6.6.2 Discussion of Selected FACT Fields

12Z – This field is mandatory for Home Delivery packages.

17Z – Ship To - Location Number – As defined by the recipient organization (e.g., Store Number, etc.). Customer specific values in use by FedEx Ground. Mutually exclusive with 26Z.

18Z – This field is conditional on whether the 3rd Party or Bill recipient service is selected. For FedEx Ground, the default account qualifier will be GR (FedEx Ground) unless EX is placed in this field.

19Z – This field is conditional on whether AOD is selected by the Shipper.

20Z – This field is conditional on whether COD and/or Declared Value are selected as services. The COD and Declared Value amounts can't exceed $25,000.   The COD currency default is the destination country. The Declared Value currency default is the origin country.   All currency values will be rounded to the nearest integer.

22Z – This field is conditional on whether OS1/OS2/OS3 Indicator or Add Handling Flag is selected by the Shipper.

23Z – This field is conditional on whether Resident Flag is selected by the Shipper.

6.7 FedEx Ground International – GI002

The second FedEx Ground 10Z record definition is for FedEx Ground International shipments. The default 99Z field is GINT01.

DI	Description	Required	OH	Data Format	Data Length
	Format Header		3	06^G_S	
10Z	Header Information (GI002) ^G_S	M	4	(an,5)	5
12Z	Ship To – Contact Phone Number ^G_S	C	4	(n, 1-14)	14
14Z	Ship To – Address Line 2 ^G_S	O	4	(an, 1-30)	30
18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground: EX = Express account number or GR = Ground account number) ^G_S	C	5	(n 1-9, an 2)	11
23Z	Residential Flag ^G_S	C	4	(an, 1)	1
22Z	OS1/OS2/OS3 Indicator ^F_S Add. Handling Flag ^G_S	C	5	(an,1), (an, 1)	2
26Z[10]	Check Digit ^F_S Address Check Code ^G_S	O	5	(an,4), (an, 0-2)	6
20Z	COD Value ^F_S Declared Value ^G_S	C	5	(r,1-8), (n,1-5)	13
K	Order Number assigned by Customer to identify a Purchasing Transaction (e.g., PO Number) ^G_S	O	4	(an, 1-20)	20
9K	Generic Transaction Reference Code (internally assigned or mutually defined) ^G_S	O		(an, 1-20)	
10K	Invoice Number ^G_S	O		(an, 1-20)	
99Z	Service Specific Information (GINT01)		3	(an,1-139)	139
	Format Trailer, ^R_S		1	^R_S	
			47		241
	"06"Format Total				288

Table 10 FedEx Ground International 10Z Record, Header GI002

6.7.1 Revision History

GI001 – GI002: Replace 21Z with new 26Z field.

6.7.2 Discussion of Selected FACT Fields

12Z – This field is mandatory for Home Delivery packages.

17Z – Ship To - Location Number – As defined by the recipient organization (e.g., Store Number, etc.). Customer specific values in use by FedEx Ground. Mutually exclusive with 26Z.

18Z – This field is conditional on whether the 3rd Party or Bill recipient service is selected. For FedEx Ground, the default account qualifier will be GR (FedEx Ground) unless EX is placed in this field.

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[10] Mutually exclusive with 17Z. Only used for customer automation generated labels.

22Z – This field is conditional on whether OS1/OS2/OS3 Indicator or Add Handling Flag is selected by the Shipper.

23Z – This field is conditional on whether the Residential service is selected.

20Z – This field is conditional on whether COD and/or Declared Value are selected as services. The COD and Declared Value amounts can't exceed $25,000.   The COD currency default is the destination country. The Declared Value currency default is the origin country.   All currency values will be rounded to the nearest integer.

6.8 GH002 FedEx Ground Home Delivery

The third FedEx Ground 10Z record definition is for FedEx Ground Home Delivery. The default 99Z field is GHDC01.

DI	Description	Required	OH	Data Format	Data Length
	Format Header		3	$06\,^G_S$	
10Z	Header Information (GH002) ^G_S	M	4	(an,5)	5
11Z	Ship To – Name Line 2 ^G_S	O	4	(an, 1-30)	30
12Z	Ship To – Contact Phone Number ^G_S	C	4	(n, 1-14)	14
14Z	Ship To – Address Line 2 ^G_S	O	4	(an, 1-30)	30
17Z	Ship To - Location Number – As defined by the recipient organization (e.g., Store Number, etc.) ^G_S	O	4	(an,1-10)	10
18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground: EX = Express account Number or GR = Ground account number) ^G_S	C	5	(n 1-9, an 2)	11
23Z	Residential Flag ^G_S	C	4	(an, 1)	1
22Z	OS1/OS2/OS3 Indicator ^F_S Add. Handling Flag ^G_S	C	5	(an,1), (an, 1)	2
26Z[11]	Check Digit ^F_S Address Check Code ^G_S	O	5	(an,4), (an, 0-2)	6
20Z	COD Value ^F_S Declared Value ^G_S	C	5	(r,1-8), (n,1-5)	13
19Z	Acknowledgment of Delivery (AOD) Flag ^G_S	C	4	(an, 1)	1
K	Order Number assigned by Customer to identify a Purchasing Transaction (e.g., PO Number) ^G_S	O	4	(an, 1-20)	20
9K	Generic Transaction Reference Code (internally assigned or mutually defined) ^G_S	O		(an, 1-20)	
10K	Invoice Number ^G_S	O		(an, 1-20)	
99Z	Service Specific Information (GHDC01, GRET01, or none)		3	(an,1-86)	86
	Format Trailer, ^R_S		1	^R_S	
			59		229
	"06"Format Total				288

Table 11 FedEx Ground Home Delivery 10Z Record, Header GH002

6.8.1 Revision History

GI001 – GI002: Replace 21Z with new 26Z field.

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[11] Mutually exclusive with 17Z. Only used for customer automation generated label.

6.8.2   Discussion of Selected FACT Fields

12Z – This field is mandatory for Home Delivery and Appointment Delivery Packages.

17Z – Ship To - Location Number – As defined by the recipient organization (e.g., Store Number, etc.). Customer specific values in use by FedEx Ground. Mutually exclusive with 26Z.

18Z – This field is conditional on whether the 3rd Party or Bill recipient service is selected. For FedEx Ground, the default account qualifier will be GR (FedEx Ground) unless EX is placed in this field.

22Z – This field is conditional on whether OS1/OS2/OS3 Indicator or Add Handling Flag is selected by the Shipper.

23Z – This field is conditional on whether the Residential service is selected. This field is included in the GH001 format to allow for potential expansion of Home Delivery to commercial buildings (small business recipients).

20Z – This field is conditional on whether COD and/or Declared Value are selected as services. The COD and Declared Value amounts can't exceed $25,000.   The COD currency default is the destination country. The Declared Value currency default is the origin country.   All currency values will be rounded to the nearest integer.

19Z – This field is conditional on whether AOD is selected by the Shipper.

99Z – This field is only used for Return Manager and Home Delivery Date Certain in the GH001 format. Non-Date Certain shipments will not have a 99Z field.

7 Service Specific Data

Tag 99Z in Format 06 is the third component in the 2D field. This field is defined under the 10Z tag definition to hold a service specific record format that provides flexibility of the 2D field down to the individual service level. The first 6 bytes of field 99Z hold the record header, which is used to define individual fields within the record through a lookup.

The 99Z header is defined as:

Axxxxx where

A represents the OpCo: E for FedEx Express; G for FedEx Ground
X is defined by at time the record is assigned its header. The x-combination is alphanumeric.

The following default header records are defined:

FedEx Express:

> EI0001 – FedEx Express international
> EI0002 – FedEx Express international US Export (support of SED Statement).
> EIP001 – FedEx Express IPD/IDF non-US export
> EIP002 – FedEx Express IPD/IDF US-export (supports SED statement)

FedEx Ground:

GHAZ01- FedEx Ground Hazardous Material

> GHAZ02 – FedEx Ground Hazardous Material
> GINT01 – FedEx Ground International
> GHDC01– Home Delivery – Date Certain and Appointment Delivery Special
> GRET01 – Return Manager

The fields within the 99Z record are separated by the character ^F_S (HEX 4C). Overall length of the 99Z is limited by the space used by the fields defined by the 10Z header. As such, the 99Z will always be dependent on the 10Z used.

The field layout of the 99Z record is as follows:

Format	Field
(6,an)	Header
^F_S	Field Separator
(variable, an)	Field 1
^F_S	Field Separator
(variable, an)	Field 2
^F_S	Field Separator
(variable, an)	Field nn (last field)
^G_S	Record terminator

Table 12 Record layout for 99Z

7.1 FedEx Express International, non-US Export – EI0001

There are four FedEx Express Service Specific record layouts defined in this standard. No 99Z field is defined for FedEx Express Domestic at this time. The first record layout is for FedEx Express International – non-US Export.

Description	Req.	OH	Data Format	Data Length
Header (EI0001)^F_S	M	1	(an,6)	6
Origin Country ^F_S	M	1	(an, 2)	2
Customs Value ^F_S	M	1	(n, 1-15)	15
Currency ^F_S	M	1	(an, 1-3)	3
Description ^F_S	M	1	(an, 1-47)	47
Transaction Code ^F_S	M	1	(an, 1-3)	3
Thermal Flag ^F_S	M	1	(an,1)	1
Carriage/Declared Value ^G_S	O	1	(n,1-6)	6
SUB TOTAL		8		83
International Total				**91**

Table 13 International non-US FedEx Express Service Specific Data

7.1.1 Discussion of Selected Fields

Description – First commodity description.

Transaction Code – Currently not used. Reserved as placeholder for future growth.

7.2 FedEx Express International, US Origin – EI0002

Description	Req.	OH	Data Format	Data Length
Header (EI0002)^F_S	M	1	(an,6)	6
Origin Country ^F_S	M	1	(an, 2)	2
Customs Value ^F_S	M	1	(n, 1-15)	15
Currency ^F_S	M	1	(an, 1-3)	3
Description ^F_S	M	1	(an, 1-47)	47
Transaction Code ^F_S	M	1	(an, 1-3)	3
Thermal Flag ^F_S	M	1	(an,1)	1
SED Statement ^F_S	M	1	(an, 1-32)	32
Carriage/Declared Value ^G_S	O	1	(n,1-6)	6
SUB TOTAL		9		115
International Total				**124**

Table 14 International US Export FedEx Express Service Specific Data

7.2.1 Discussion of Selected Fields

The Header information field, for the default formats is:

International – non-US Export: EI0001
International – US Export: EI0002. Format includes SED Statement.

Description – First commodity description.

Transaction Code – Currently not used. Reserved as placeholder for future growth.

7.3 FedEx Express International IPD/IDF, non-US Export – EIP001

The two IPD/IDF definitions are subsets of the International FedEx Express service specific definitions.

Description	Req.	OH	Data Format	Data Length
Header (EIP001)^F_S	M	1	(an,6)	6
Origin Country ^F_S	M	1	(an, 2)	2
Description ^F_S	M	1	(an, 1-47)	47
Transaction Code ^F_S	M	1	(an, 1-3)	3
Thermal Flag ^F_S	M	1	(an,1)	1
SUB TOTAL		5		59
International Total				**64**

Table 15 International IPD/IDF non-US FedEx Express Service Specific Data

7.4 FedEx Express International IPD/IDF, US Origin – EIP002

Description	Req.	OH	Data Format	Data Length
Header (EIP002)^F_S	M	1	(an,6)	6
Origin Country ^F_S	M	1	(an, 2)	2
Description ^F_S	M	1	(an, 1-47)	47
Transaction Code ^F_S	M	1	(an, 1-3)	3
Thermal Flag ^F_S	M	1	(an,1)	1
SED Statement ^F_S	M	1	(an, 1-32)	32
SUB TOTAL		6		91
International Total				**97**

Table 16 International IPD/IDF US Export FedEx Express Service Specific Data

7.4.1 Discussion of Selected Fields

The Header information field, for the default formats is:

International – non-US Export: EIP001
International – US Export: EIP002. Format includes SED Statement.

7.5 FedEx Ground Hazardous Materials

There are four categories of Service Specific record layouts defined in this standard. The Hazardous Materials definition is used for GD001.   Two versions of the format have been defined, with GHAZ02 being the current production version for label generation.

7.5.1 FedEx Ground Hazardous Materials - GHAZ01

Old GHAZ format. Replaced by GHAZ02.

Description	Req.	OH	Data Format	Data Length
Header (GHAZ01)^F_S	M	1	(an,6)	6
Identification Number (UN/NA) ^F_S	M	1	(an, 6)	6
Exact Quantity of Hazardous Material ^F_S	M	1	(r, 1-8)	8
Unit of Measurement ^F_S	M	1	(an, 1-3)	3
24-hour Emergency Response Contact Number ^G_S	M	1	(an, 1-18)	18
SUB TOTAL		5		41
Hazardous Material Total				**46**

Table 17 Hazardous Materials Service Specific Data. One item description.

7.5.2 FedEx Ground Hazardous Materials - GHAZ02

Current GHAZ format.

Description	Req.	OH	Data Format	Data Length
Header (GHAZ02)^F_S	M	1	(an,6)	6
24-hour Emergency Response Contact Number ^F_S	M	1	(an, 1-18)	18
Identification Number Item #1(UN/NA) ^F_S	M	1	(an, 6)	6
Exact Quantity of Hazardous Material Item #1 ^F_S	M	1	(r, 1-8)	8
Unit of Measurement Item #1 ^F_S	M	1	(an, 1-3)	3
Identification Number Item #2(UN/NA) ^F_S	O	1	(an, 6)	6
Exact Quantity of Hazardous Material Item #2 ^F_S	O	1	(r, 1-8)	8
Unit of Measurement Item #2 ^F_S	O	1	(an, 1-3)	3
Identification Number Item #3(UN/NA) ^F_S	O	1	(an, 6)	6
Exact Quantity of Hazardous Material Item #3 ^F_S	O	1	(r, 1-8)	8
Unit of Measurement Item #3 ^G_S	O	1	(an, 1-3)	3
SUB TOTAL		11		75
Hazardous Material Total				**86**

Table 18 FedEx Ground Hazardous Materials Service Specific Data.

This structure captures the information Hazardous Material (excluding data already captured in format 01 and company specific data in format 06).

7.5.3 Discussion of Selected Fields

Identification Number (UN/NA) - The UN (United Nations) or NA (North America) number is a unique 4 digit number used to identify the D.O.T. Proper Shipping Name found in column 2 of the FedEx Ground Hazardous Materials Table (OP-896). The four digit number is preceded by UN or NA. This number can be found in column 4 of the hazardous materials table.

Unit of Measurement - The units of measure accepted by FedEx automation devices.

7.6 FedEx Ground International – GINT01

The second structure captures the information required to ship Internationally (excluding data already captured in format 01 and company specific data in format 06). This is only used for 10Z GI001.

Description	Req.	OH	Data Format	Data Length
Header (GINT01)^F_S		1	(an,6)	6
Origin Country ^F_S	M	1	(n, 3)	3
Customs Value ^F_S	M	1	(n, 1-11)	11
Currency ^F_S	M	1	(an, 1-3)	3
Description ^F_S	M	1	(an, 1-47)	47
SED Statement ^F_S	M	1	(an, 1-32)	32
Ship To – Address Line 3 ^G_S	O	1	(an, 1-30)	30
SUB TOTAL		7		132
International Total				**139**

Table 19 FedEx Ground International Service Specific Data

7.6.1 Discussion of Selected Fields

Description – First commodity description.

7.7 Date Certain and Appointment Delivery – GHDC01

The third structure captures the information required to ship Home Delivery – Date Certain and Appointment Delivery (excluding data already captured in format 01 and company specific data in format 06). This is only used for the 10Z record GH001.

Description	Req.	OH	Data Format	Data Length
Header (GHDC01)^F_S		1	(an,6)	6
Date Certain Date (YYYYMMDD)^F_S	C	1	(an, 8)	8
Ship To–Alternative Contact – Phone Number or Fax Number or Email Address ^F_S	O	1	(an, 1-18)	18
Delivery Instructions ^G_S	O	1	(an, 1-50)	50
SUB TOTAL		4		82
Date Certain Total				**86**

Table 20 FedEx Ground Home Delivery Service Specific Data

7.7.1 Discussion of Selected Fields

Date Certain Date – The format used is YYYYMMDD. Field is Mandatory for Date Certain, not for Appointment Delivery.

7.8 Return Manager – GRET01

Description	Req.	OH	Data Format	Data Length
Header (GRET01)^F_S	M	1	(an,6)	6
FedEx Ground original full barcode number ^G_S	O	1	(an, 22)	22
SUB TOTAL		2		28
Return Manager Total				**30**

Table 21 FedEx Ground Return Manager Service Specific Data

8 Design Considerations

The common limiting factor for all three 2D components is the 500 bytes of capacity available for the primary 2D field. Field and record formats were selected to minimize overhead and maximize efficient data capacity of the 2D label.

The ANSI MH10.8.3 standard and formats used are discussed in more detail in Section 3 of this document.

8.1 Additional 2D Fields

As seen by the default FACT field 16Z, the option exists to chain several 2D symbols. This allows FedEx the ability to go beyond the 500 bytes limit set in the primary 2D field. Subsequent 2D fields may hold up to 2,725 bytes each.

Supplemental 2D fields will be using the tag-defined format, Format 06, as the standard record layout. In most cases, the 99Z field will be used for the secondary label with record layout defined by its header.

8.1.1 Complete VISA Manifest Record

Specified as a wrapper for the current VISA Manifest 2D ASN1 format used by EMEA, this specialized secondary 2D field follows the 99Z format. *This secondary field is outside the scope of the current 2D effort under development (Sept03 and Jan04). No secondary 2D fields are included in the current automation development.*

Description	Req.	OH	Data Format	Data Length
Message Header, $[\ )>^R_S$	M	4	$[\ )>^R_S$	
Format Header	M	3	$06\ ^G_S$	
Field Identifier	M	3	99Z	
Header (EI0003)^F_S	M	1	(an,6)	6
VISA MANIFEST RECORD (see Appendix)	M	1	(an, 1500)	1500
Format Trailer, ^R_S	M	1	^R_S	
Message Trailer, EOT		1	EOT	
SUB TOTAL		14		1506
Complete VISA Manifest Information				**1520**

Table 22 VISA Manifest Information – Complete Record per EMEA Standard

This 2D format will be used on the EMEA manifest ply replacing the current 2D field on that label. Other regions are considering adding the format Only International (region specific) automation devices are scheduled to generate this format.

When used, the 16Z field in the primary label should be coded with the reserved value **E001**. This identifies the secondary label to follow the format of 99ZEI0003 as outlined above.

8.2 Customer Automation 2D Assignment Logic

Below is an overview of how the current record definitions are implemented in customer automation tools (Jan04 version below). Note that this primarily relates to the printing of the 2D, while on the capture side, all defined record definitions must be recognized and processed.

Common

Ground
- International — 10Z GI002 — 99Z GINT01
- Domestic
  - Ground Home Del Flag = 'Y' — 10Z GH002
    - Date Certain or Appt Del — 99Z GHDC01
    - Return — 99Z GRET01
    - 99Z NOT
  - Ground Home Del Flag = 'N' — 10Z GD002
    - Return — 99Z GRET01
    - HazMat = 'Y' — 99Z GHAZ02
    - HazMat = 'N' — 99Z NOT

Express
- Domestic — 10Z ED002 — 99Z NOT
- International
  - IPD/IDF CRN — 10Z EIP01
    - US Origin — 99Z EIP002
    - non-US Origin — 99Z EIP001
  - non-CRN US Origin — 10Z EIO01 — 99Z EI0002
  - non-CRN non-US Origin — 10Z EII01 — 99Z EI0001

Figure 5 Customer Automation assignment logic for 2D definitions

9 Process for Updating and Maintaining Flexible Data Format

The 2D record format for FedEx is designed to provide flexibility across our OpCo units, down to the service level. The default 2D content records have been designed to meet specific requirements such as billing, customs information for FedEx Express International, and the "Date for date-specific delivery" field for FedEx Ground Home Delivery.

However, all portions of the 2D field except for the Shared Data (Corporate Common) are configurable. Approximately 318 bytes (for FedEx Express) of the total 500 bytes can be configured for Company or Service Specific data. As seen in the previous section, the header information contained in 10Z and 99Z both define the fields included in the record.

When a user determines a need to alter either the Company or Service Specific record content, a request is to be submitted to the governing group (TBD). The request describes the changes, benefits and impact on the corporation. The request will be reviewed based on

- Fields requested removed and impact on existing projects
- Available 2D capacity
- Impact to operations
- Implementation scope of the new field.
- Legal requirements
- Value of the initiative. ROI and strategic benefits
- Impact on 2D capacity past this initiative

When a new record layout has been defined, a corresponding header record is generated which is used to identify the fields and their format to both label generating and capture devices.

New record layouts are downloaded to dependent devices on a scheduled (TBD) basis.

It is important to remember that the specification encompasses both the label generating and the capture side of the 2D field. When a new version or a record layout with a corresponding 10Z or 99Z record header is defined for the label printing side, it will replace the existing definition. For example, if a new version for "FedEx Express domestic" is released, it will have the header record "ED002", replacing "ED001". The automation device will only generate <u>one version</u> of each OpCo specific record layout. Scanning applications on the other hand have to support all released header records to allow for backwards compatibility. This applies to all header definitions.

10 Appendix

10.1 Acknowledgments:

Information from the following sources was used in the creation of this specification.

"The *Bar Code Book*"
Palmer, R.
Third Edition 1995
Helmers Publishing

"RPS Bar Code Label Guide"
RPS, Inc.

ASTRA Specification, Version 3.7

"ANSI MH10.8.3"

10.2 EMEA VISA Manifest Record Format

http://scanningtech.fedex.com/label/files/vmr_2d_barcode_content.doc

10.3 FedEx Ground's Current Bar Code Specifications

http://grd.fedex.com/online/mcode/BarCodeSpecs2002.pdf

10.4 Subset of ASCII/ISO 646 (Table of Hexadecimal and Decimal Values)

HEX	DEC	ASCII / ISO 646	HEX	DEC	ASCII / ISO 646	HEX	DEC	ASCII / ISO 646
00	00	NUL	30	48	0	60	96	'
01	01	SOH	31	49	1	61	97	A
02	02	STX	32	50	2	62	98	B
03	03	ETX	33	51	3	63	99	C
04	04	$^E O_T$	34	52	4	64	100	D
05	05	ENQ	35	53	5	65	101	E
06	06	ACK	36	54	6	66	102	F
07	07	BEL	37	55	7	67	103	G
08	08	BS	38	56	8	68	104	H
09	09	HT	39	57	9	69	105	I
0A	10	LF	3A	58	:	6A	106	J
0B	11	VT	3B	59	;	6B	107	K
0C	12	FF	3C	60	<	6C	108	L
0D	13	CR	3D	61	=	6D	109	M
0E	14	SO	3E	62	>	6E	110	N
0F	15	SI	3F	63	?	6F	111	O
10	16	DLE	40	64	@	70	112	P
11	17	DC1	41	65	A	71	113	Q
12	18	DC2	42	66	B	72	114	R
13	19	DC3	43	67	C	73	115	S
14	20	DC4	44	68	D	74	116	T
15	21	NAK	45	69	E	75	117	U
16	22	SYN	46	70	F	76	118	V
17	23	ETB	47	71	G	77	119	w
18	24	CAN	48	72	H	78	120	x
19	25	EM	49	73	I	79	121	y
1A	26	SUB	4A	74	J	7A	122	z
1B	27	ESC	4B	75	K	7B	123	{
1C	28	$^F S$	4C	76	L	7C	124		
1D	29	$^G S$	4D	77	M	7D	125	}
1E	30	$^R S$	4E	78	N	7E	126	~
1F	31	$^U S$	4F	79	O	7F	127	DEL
20	32	SP	50	80	P			
21	33	!	51	81	Q			
22	34	"	52	82	R			
23	35	#	53	83	S			
24	36	$	54	84	T			
25	37	%	55	85	U			
26	38	&	56	86	V			
27	39	'	57	87	W			
28	40	(	58	88	X			
29	41	)	59	89	Y			
2A	42	*	5A	90	Z			
2B	43	+	5B	91	[			
2C	44	,	5C	92	\			
2D	45	-	5D	93	]			
2E	46	.	5E	94	^			
2F	47	/	5F	95	_			

10.5 Handling Codes and Sum Values

Description	COSMOS VALUE	ASTRA SUM Value	Three Char Value
Hold At Location	1	1	HLD
Piece Count Verification	18	128	PCV
Accessible Dangerous Goods	14	2	ADG
Saturday Delivery	3	4	
Inaccessible Dangerous Goods	4	8	IDG
Dry Ice	6	32	ICE
Customs Cleared	7	64	CLR
Indirect Signature Required	34	1024	ISR
Direct Signature Required	10	256	DSR
Adult Signature Required	35	4096	ASR
Signature Required	10	256	
Broker Select Option	40	16	BSO
Residential Delivery	28		RES
Inside Delivery	42		ISD
Priority Alert	15		*PA
Saturday Pickup	9		
COD	13		
Inside Pickup	41		
Freight Residential Delivery	51		
FICE	91	2048	CES
Third Party Consignee			TPC

10.6 Country Codes

Country Description	ISO Two Char Code	ISO Three Char Code	FedEx Two Char Code	ISO Three Digit
AFGHANISTAN	AF	AFG	AF	4
ALBANIA	AL	ALB	AL	8
ALGERIA	DZ	DZA	DZ	12
AMERICAN SAMOA	AS	ASM	AS	16
ANDORRA	AD	AND	AD	20
ANGOLA	AO	AGO	AO	24
ANGUILLA	AI	AIA	AI	660
ANTARCTICA	AQ	ATA	AQ	10
ANTIGUA AND BARBUDA	AG	ATG	AG	28
ARGENTINA	AR	ARG	AR	32
ARMENIA	AM	ARM	AM	51
ARUBA	AW	ABW	AW	533
AUSTRALIA	AU	AUS	AU	36
AUSTRIA	AT	AUT	AT	40
AZERBAIJAN	AZ	AZE	AZ	31
BAHAMAS	BS	BHS	BS	44
BAHRAIN	BH	BHR	BH	48
BANGLADESH	BD	BGD	BD	50
BARBADOS	BB	BRB	BB	52
BELARUS	BY	BLR	BY	112
BELGIUM	BE	BEL	BE	56
BELIZE	BZ	BLZ	BZ	84
BENIN	BJ	BEN	BJ	204
BERMUDA	BM	BMU	BM	60
BHUTAN	BT	BTN	BT	64
BOLIVIA	BO	BOL	BO	68
BOSNIA / HERZEGOWINA	BA	BIH	BA	70
BOTSWANA	BW	BWA	BW	72
BOUVET ISLAND	BV	BVT	BV	74
BRAZIL	BR	BRA	BR	76
BRITISH INDIAN OCEAN TERRITORY	IO	IOT	IO	86
BRUNEI	BN	BRN	BN	96
BULGARIA	BG	BGR	BG	100
BURKINA FASO	BF	BFA	BF	854
BURUNDI	BI	BDI	BI	108
CAMBODIA	KH	KHM	KH	116
CAMEROON	CM	CMR	CM	120
CANADA	CA	CAN	CA	124
CAPE VERDE	CV	CPV	CV	132
CAYMAN ISLANDS	KY	CYM	KY	136
CENTRAL AFRICAN REPUBLIC	CF	CAF	CF	140

CHAD	TD	TCD	TD	148
CHILE	CL	CHL	CL	152
CHINA	CN	CHN	CN	156
CHRISTMAS ISLAND	CX	CXR	CX	162
COCOS (KEELING) ISLANDS	CC	CCK	CC	166
COLOMBIA	CO	COL	CO	170
COMOROS	KM	COM	KM	174
CONGO	CG	COG	CG	178
ZAIRE	CG	COG	ZR	178
CONGO, DEM REP OF	CD	COD	CD	180
COOK ISLANDS	CK	COK	CK	184
COSTA RICA	CR	CRI	CR	188
IVORY COAST	CI	CIV	CI	384
CROATIA (local name: Hrvatska)	HR	HRV	HR	191
CUBA	CU	CUB	CU	192
CYPRUS	CY	CYP	CY	196
CZECH REPUBLIC	CZ	CZE	CZ	203
DENMARK	DK	DNK	DK	208
DJIBOUTI	DJ	DJI	DJ	262
DOMINICA	DM	DMA	DM	212
DOMINICAN REPUBLIC	DO	DOM	DO	214
EAST TIMOR	TP	TMP	TL	626
ECUADOR	EC	ECU	EC	218
EGYPT	EG	EGY	EG	818
EL SALVADOR	SV	SLV	SV	222
EQUATORIAL GUINEA	GQ	GNQ	GQ	226
ERITREA	ER	ERI	ER	232
ESTONIA	EE	EST	EE	233
ETHIOPIA	ET	ETH	ET	231
FALKLAND ISLANDS (MALVINAS)	FK	FLK	FK	238
FAROE ISLANDS	FO	FRO	FO	234
FIJI	FJ	FJI	FJ	242
FINLAND	FI	FIN	FI	246
FRANCE	FR	FRA	FR	250
FRANCE, METROPOLITAN	FX	FXX	FX	249
FRENCH GUIANA	GF	GUF	GF	254
FRENCH POLYNESIA	PF	PYF	PF	258
FRENCH SOUTHERN TERRITORIES	TF	ATF	TF	260
GABON	GA	GAB	GA	266
GAMBIA	GM	GMB	GM	270
GEORGIA	GE	GEO	GE	268
GERMANY	DE	DEU	DE	276
GHANA	GH	GHA	GH	288
GIBRALTAR	GI	GIB	GI	292
GREECE	GR	GRC	GR	300
GREENLAND	GL	GRL	GL	304
GRENADA	GD	GRD	GD	308

GUADELOUPE	GP	GLP	GP	312
GUAM	GU	GUM	GU	316
GUATEMALA	GT	GTM	GT	320
GUINEA	GN	GIN	GN	324
GUINEA-BISSAU	GW	GNB	GW	624
GUYANA	GY	GUY	GY	328
HAITI	HT	HTI	HT	332
HEARD AND MC DONALD ISLANDS	HM	HMD	HM	334
HOLY SEE (VATICAN CITY STATE)	VA	VAT	VA	336
HONDURAS	HN	HND	HN	340
HONG KONG	HK	HKG	HK	344
HUNGARY	HU	HUN	HU	348
ICELAND	IS	ISL	IS	352
INDIA	IN	IND	IN	356
INDONESIA	ID	IDN	ID	360
IRAN	IR	IRN	IR	364
IRAQ	IQ	IRQ	IQ	368
IRELAND	IE	IRL	IE	372
ISRAEL	IL	ISR	IL	376
ITALY	IT	ITA	IT	380
JAMAICA	JM	JAM	JM	388
JAPAN	JP	JPN	JP	392
JORDAN	JO	JOR	JO	400
KAZAKHSTAN	KZ	KAZ	KZ	398
KENYA	KE	KEN	KE	404
KIRIBATI	KI	KIR	KI	296
KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF	KP	PRK	KP	408
SOUTH KOREA	KR	KOR	KR	410
KUWAIT	KW	KWT	KW	414
KYRGYZSTAN	KG	KGZ	KG	417
LAOS	LA	LAO	LA	418
LATVIA	LV	LVA	LV	428
LEBANON	LB	LBN	LB	422
LESOTHO	LS	LSO	LS	426
LIBERIA	LR	LBR	LR	430
LIBYAN ARAB JAMAHIRIYA	LY	LBY	LY	434
LIECHTENSTEIN	LI	LIE	LI	438
LITHUANIA	LT	LTU	LT	440
LUXEMBOURG	LU	LUX	LU	442
MACAU	MO	MAC	MO	446
MACEDONIA	MK	MKD	MK	807
MADAGASCAR	MG	MDG	MG	450
MALAWI	MW	MWI	MW	454
MALAYSIA	MY	MYS	MY	458
MALDIVES	MV	MDV	MV	462
MALI	ML	MLI	ML	466
MALTA	MT	MLT	MT	470

MARSHALL ISLANDS	MH	MHL	MH	584
MARTINIQUE	MQ	MTQ	MQ	474
MAURITANIA	MR	MRT	MR	478
MAURITIUS	MU	MUS	MU	480
MAYOTTE	YT	MYT	YT	175
MEXICO	MX	MEX	MX	484
MICRONESIA	FM	FSM	FM	583
MOLDOVA	MD	MDA	MD	498
MONACO	MC	MCO	MC	492
MONGOLIA	MN	MNG	MN	496
MONTSERRAT	MS	MSR	MS	500
MOROCCO	MA	MAR	MA	504
MOZAMBIQUE	MZ	MOZ	MZ	508
MYANMAR	MM	MMR	MM	104
NAMIBIA	NA	NAM	NA	516
NAURU	NR	NRU	NR	520
NEPAL	NP	NPL	NP	524
NETHERLANDS	NL	NLD	NL	528
NETHERLANDS ANTILLES	AN	ANT	AN	530
NEW CALEDONIA	NC	NCL	NC	540
NEW ZEALAND	NZ	NZL	NZ	554
NICARAGUA	NI	NIC	NI	558
NIGER	NE	NER	NE	562
NIGERIA	NG	NGA	NG	566
NIUE	NU	NIU	NU	570
NORFOLK ISLAND	NF	NFK	NF	574
SAIPAN	MP	MNP	MP	580
NORWAY	NO	NOR	NO	578
OMAN	OM	OMN	OM	512
PAKISTAN	PK	PAK	PK	586
PALAU	PW	PLW	PW	585
PANAMA	PA	PAN	PA	591
PAPUA NEW GUINEA	PG	PNG	PG	598
PARAGUAY	PY	PRY	PY	600
PERU	PE	PER	PE	604
PHILIPPINES	PH	PHL	PH	608
PITCAIRN	PN	PCN	PN	612
POLAND	PL	POL	PL	616
PORTUGAL	PT	PRT	PT	620
PUERTO RICO	PR	PRI	PR	630
QATAR	QA	QAT	QA	634
REUNION	RE	REU	RE	638
ROMANIA	RO	ROM	RO	642
RUSSIAN FEDERATION	RU	RUS	RU	643
RWANDA	RW	RWA	RW	646
SAINT KITTS AND NEVIS	KN	KNA	KN	659
SAINT LUCIA	LC	LCA	LC	662

SAINT VINCENT	VC	VCT	VC	670
SAMOA	WS	WSM	WS	882
SAN MARINO	SM	SMR	SM	674
SAO TOME AND PRINCIPE	ST	STP	ST	678
SAUDI ARABIA	SA	SAU	SA	682
SENEGAL	SN	SEN	SN	686
SERBIA AND MONTENEGRO	CS	SCG	CS	891
SEYCHELLES	SC	SYC	SC	690
SIERRA LEONE	SL	SLE	SL	694
SINGAPORE	SG	SGP	SG	702
SLOVAK REPUBLIC	SK	SVK	SK	703
SLOVENIA	SI	SVN	SI	705
SOLOMON ISLANDS	SB	SLB	SB	90
SOMALIA	SO	SOM	SO	706
SOUTH AFRICA	ZA	ZAF	ZA	710
SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS	GS	SGS	GS	239
SPAIN	ES	ESP	ES	724
SRI LANKA	LK	LKA	LK	144
ST. HELENA	SH	SHN	SH	654
ST. PIERRE	PM	SPM	PM	666
SUDAN	SD	SDN	SD	736
SURINAME	SR	SUR	SR	740
SVALBARD AND JAN MAYEN ISLANDS	SJ	SJM	SJ	744
SWAZILAND	SZ	SWZ	SZ	748
SWEDEN	SE	SWE	SE	752
SWITZERLAND	CH	CHE	CH	756
SYRIA	SY	SYR	SY	760
TAIWAN	TW	TWN	TW	158
TAJIKISTAN	TJ	TJK	TJ	762
TANZANIA, UNITED REPUBLIC OF	TZ	TZA	TZ	834
THAILAND	TH	THA	TH	764
TOGO	TG	TGO	TG	768
TOKELAU	TK	TKL	TK	772
TONGA	TO	TON	TO	776
TRINIDAD AND TOBAGO	TT	TTO	TT	780
TUNISIA	TN	TUN	TN	788
TURKEY	TR	TUR	TR	792
TURKMENISTAN	TM	TKM	TM	795
TURKS / CAICOS	TC	TCA	TC	796
TUVALU	TV	TUV	TV	798
UGANDA	UG	UGA	UG	800
UKRAINE	UA	UKR	UA	804
UNITED ARAB EMIRATES	AE	ARE	AE	784
UNITED KINGDOM	GB	GBR	GB	826
UNITED STATES	US	USA	US	840
UNITED STATES MINOR OUTLYING ISLANDS	UM	UMI	UM	581
URUGUAY	UY	URY	UY	858

UZBEKISTAN	UZ	UZB	UZ	860
VANUATU	VU	VUT	VU	548
VENEZUELA	VE	VEN	VE	862
VIETNAM	VN	VNM	VN	704
VIRGIN ISLANDS (BRITISH)	VG	VGB	VG	92
VIRGIN ISLANDS (U.S.)	VI	VIR	VI	850
WALLIS AND FUTUNA ISLANDS	WF	WLF	WF	876
WESTERN SAHARA	EH	ESH	EH	732
YEMEN	YE	YEM	YE	887
YUGOSLAVIA	YU	YUG	YU	891
ZAMBIA	ZM	ZMB	ZM	894
ZIMBABWE	ZW	ZWE	ZW	716
PALESTINE			PS	0

10.7 Revision Overview for Version 1.5

Category	Header	TAG	Description	Req.	OH	Data Format	Modification
10Z	ED001	23Z	Residential Flag ^G_S	C	4	(an, 1)	Remove - redundant since covered by handling codes
10Z	ED001	99Z	Service Specific Information	O	3		Remove the ED0001 99Z definition. Frees 26 bytes
10Z	ED001	13Z	4-digit Handling Code ^F_S Individual 2-digit Handling Codes ^G_S	M	5	(n,4),(an,0-16)	
10Z	ED001	15Z	Meter # ^G_S	M	4	(an, 1-7)	Changed from 8 to 7 bytes
10Z	ED001	18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground EX or GR) ^G_S	C	5	(n 1-9, an 2)	New qualifier definitions: E3 = 3rd Party and E2 = Bill Recipient. For Ground EX or GR.
10Z	ED001	25Z	COD Check Type ^F_S COD Payment Type ^G_S	C	5	(a,1),(an,1-2)	Changed from (a,1),(an2)
10Z	ED001	21Z	Check Digit	O	4	(n,4)	ADDED
10Z	ED001	20Z	COD Value ^F_S Declared Value ^G_S	C	5	(r,1-8), (n,1-6)	One additional byte added to Declared Value for Express
10Z	EI001	18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground EX or GR) ^G_S	C	5	(n 1-9, an 2)	ADDED
10Z	EI001	13Z	4-digit Handling Code ^F_S Individual 2-digit Handling Codes ^G_S	M	5	(n,4),(an,0-16)	New record format. 4-digit ASTRA , field separator, and 2-digit individual
10Z	EI001	15Z	Meter # ^G_S	M	4	(an, 1-7)	Changed from 8 to 7 bytes
10Z	EI001	18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground EX or GR) ^G_S	C	5	(n 1-9, an 2)	New qualifier definitions: E3 = 3rd Party and E2 = Bill Recipient. For Ground EX or GR.
10Z	EI001	21Z	Check Digit	O	4	(n,4)	ADDED
10Z	GD001						Note: Same record defintion will be used for Canada
10Z	GD001	17Z	Location Number – As defined by the recipient organization (e.g., Store Number, etc.) ^G_S	O	4	(an, 1-10)	REMOVE. This field will never be generated from Automation. Recommend a dedicated header record for customer generated labels that will used it.
10Z	GD001	99Z	Service Specific Information (GHAZ02)		3	(an,1-86)	OR GNETR01 - will never have both haz and Return Mgr
10Z	GD001	18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground EX or GR) ^G_S	C	5	(n 1-9, an 2)	New qualifier definitions: E3 = 3rd Party and E2 = Bill Recipient. For Ground EX or GR.
10Z	GD001	21Z	Check Digit	O	4	(n,4)	ADDED
10Z	GD001	17Z	Location Number – As defined by the recipient organization (e.g., Store Number, etc.) ^G_S	O	4	(an, 1-10)	REMOVE. Defined now as automation header since this will never be generated from Automation?

Category	Header	TAG	Description	Req.	OH	Data Format	Modification
10Z	GH001	17Z	Location Number – As defined by the recipient organization (e.g., Store Number, etc.) ^G_S	O	4	(an, 1-10)	Remove. This field will never be generated from Automation. Recommend a dedicated header record for customer generated labels that will used it.
10Z	GH001	99Z	Service Specific Information (GHAZ02)		3	(an,1-86)	OR GRET01 - will never have both haz and Return Mgr
10Z	GH001	18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground EX or GR) ^G_S	C	5	(n 1-9, an 2)	New qualifier definitions: E3 = 3rd Party and E2 = Bill Recipient. For Ground EX or GR.
10Z	GH001	21Z	Check Digit	O	4	(n,4)	ADDED
10Z	GINT02	18Z	3rd Party or Bill Recipient Account Number ^F_S Account Qualifier (Express: E3 = 3rd Party and E2 = Bill Recipient. Ground EX or GR) ^G_S	C	5	(n 1-9, an 2)	New qualifier definitions: E3 = 3rd Party and E2 = Bill Recipient. For Ground EX or GR.
10Z	GINT02	21Z	Check Digit	O	4	(n,4)	ADDED
99Z	EI0001		Customs Value ^F_S	M	1	(n, 1-15)	Increased to 15
99Z	EI0001		Ship To – Address Line 3 ^G_S	O	1	(an, 1-30)	REMOVED
99Z	EI0001		Carriage/Declared Value	O	1	(n,1-6)	ADDED field: Will always be integer
99Z	EI0002		Customs Value ^F_S	M	1	(n, 1-15)	Increased to 15
99Z	EI0002		Ship To – Address Line 3 ^G_S	O	1	(an, 1-30)	REMOVED
99Z	EI0002		Carriage/Declared Value	O	1	(n,1-6)	ADDED field: Will always be integer
99Z	GHAZ02		Unit of Measurement Item #1^F_S	M	1	(an, 1-3)	Change of unit of measure isn't checked, so remove any requirement for specific values from write-up.
99Z	GINT02		Origin Country ^F_S	M	1	(n, 3)	Changed to 3 numeric from 3an
99Z	GRET01		FedEx Ground full bar code number ^F_S	O	1	(an, 22)	NEW record definition.

10.8 Revision Overview for Version 1.5c

1. Page 29: Table 10. <u>Correction</u>. Need Fs - Field Separator row in between the Header and Field 1 row.

2. Page 16: Table 3. Correction. First line description "Format Envelope Header (Carrier Data 01) Gs". The Gs taken out - this applies to the description field only. The Data Format field is OK.

3. Page 17: <u>Clarification</u>. "Tracking Number (assigned by carrier) – For FedEx Express, this field includes both the tracking number and the form. Format used is 12 digit tracking number followed by 4 digit form id. The right four digits will be the form id. Form ID will be 'forced' into a 4-byte representation. If it is less than 4 bytes; the available bytes will be zero-padded on the left to create 4 bytes. The 4-bytes represented by the FORM ID will be concatenated on the end of the tracking number starting at the right-most byte and working to the left. This assures the FormID can be parsed as the last 4 characters."

4. New Z Value defined. <u>SPECIFICATION CHANGE</u>. The new field, Z26 holds the Check Digit (an,4) and Address Check Code(an,0-2). The field will carry the data currently served by 21Z and add in a two bytes field to allow the specific the Address Check to be tracked. The two fields are separated with the control character ^F_S.

5. Replace 21Z in all 10Z definitions and release new 10Z record layouts. <u>SPECIFICATION CHANGE</u>. The following FedEx Ground 10Z Definitions will be impacted:
   d. GI001, replaced by GI002
   e. GD001, replaced by GD002
   f. GH001, replaced by GH002

   This will add 3 bytes to all definitions with 21Z.

   The following FedEx Express 10Z Definitions will be impacted:

   g. EI001, replaced by EIO01 and EII01
   h. ED001, replaced by ED002

6. Define 10Z records for FedEx Express International, US Inbound (EII01), and US Outbound (EIO01). <u>SPECIFICATION CHANGE.</u> Currently they share one 10Z definition EI001 and the available space for definition is limited by the largest 99Z defined for this 10Z. EI001 will be retired. A total of 33 bytes are made available to EI US Inbound by splitting the formats.

7. The 21Z will be retired for all future definitions. <u>SPECIFICATION CHANGE</u>

8. Section 7.1, page 32, Table 12. <u>Correction</u>. EI0001 was incorrectly summed to 84, should be 91. Also impacts the EII01 total through the 99Z field definition.

10.9 Revision Overview for Version 1.5e

1. Correction: Sections 7.5.1 and 7.5.2. Word "Weight" replaced with the word "Quantity" in the Exact Weight of Hazardous Material fields in the GHAZ01 and GHAZ02 sections

2. Correction: Section 7.8 Total read "Hazardous Materials Total". Corrected to read "Return Manager Total"

3. Correction: Section 7.7, title read "FedEx Ground Home Deliver, Date Certain and Appointment Delivery, Service Specific Record Definition – GHDC01", changed to read "Date Certain and Appointment Delivery, Service Specific Record Definition – GHDC01"

4. Correction: Section 5. Corporate Common. "Container n of total of x" is conditional for FedEx Ground. Mandatory for FedEx Ground International.

5. Change: Section 6.1, 6.1.1, 6.6, 6.6.2, 6.7, 6.7.1, 6.8, 6.8.1, No format change for field, but add new allowed value to support for new Oversized category, OS3, indicated with number 3 for field 22Z.

6. Informative: Section 6.1.1, Default values for FedEx Ground:
   a. K is default PO#
   b. 9K is default shipper reference number
   c. 10K is default invoice number.

7. Informative: Section 6.1.1, 19Z and 23Z fields. Allowed values "Y" and "N"

8. Correction/change: Section 7.7 GHDC01 definition. "Date Certain Date (YYYYMMDD) changed from Mandatory to Conditional. Format changed allowed without changing definition heading because it was less restrictive then previous definition and has no negative application impact. Field is Mandatory for Date Certain, not for Appointment Delivery.

9. Informative: "COD Value" field in 20Z can be left blank.

10. Correction: Ground Home Del Flag = 'Y' removed from "10Z GD002" block of 8.2 "Customer Automation assignment logic for 2D definitions" flow chart.

11. Edit/Informative: Remove redundant 06 discussions from all definitions. The main discussions of the fields will be in the 6.1 and 6.1.1 sections of the document.

10.10 Revision Overview for Version 1.5f

1. <u>Informative</u>. Edits in Sections 1 and 2. Clarifications and updated language added.
2. <u>Change</u>. Section 6.1. COD field length in 20Z increased from max of 8 10 bytes for FedEx Express.
3. <u>Change</u>. Section 6.2. ED002 definition. This is the only definition impacted by the change to 20Z (field length increased for COD). Same definition identifier kept since there were no operational/scanning/capture impacts.
4. <u>Informative.</u> For consistency, FedEx will be used in place of Federal Express.
5. <u>Informative.</u> Bar code will be used in place of "barcode".
6. <u>Informative.</u> Section 5 below Table 3 the "Ship to Street Address Line1" and "Ship to City" are (an,1-35) in the ANSI specification and both are truncated to a maximum of 30 bytes for FedEx Express. ("and FedEx Ground" added to this sentence).
7. <u>Informative.</u> Section 5.1 the "RPSC" used with the UCC/EAN 128 (or 00) bar code refers to the UCC/EAN 128 as the SSCC-18. The 96 bar code could also be considered a UCC/EAN 128 bar code. The SSCC-18 is a specific UCC/EAN 128 bar code.
8. <u>Correction</u>. Section 5.1 the paragraph that begins with "In order for Fed Ex". Eliminate the space between the Fed and the Ex as it is written FedEx throughout the document. In the table where it refers to the Primary Symbol the word "GROUND" changed to "Ground" to be consistent with the rest of the table.
9. <u>Informative</u>. The Julian Pickup Date in Section 5 added footnote explaining the M/O requirements.
10. <u>Informative</u>. Section 6.1.1 the13Z field added "Currently, used only for FedEx Express."
11. <u>Informative</u>. All 18Z field definitions added clarification for FedEx Ground. Added "Ground: EX = Express account number or GR = Ground account number".
12. <u>Informative</u>. Section 6.1.1, 21Z field added "Used only for FedEx automation platforms."
13. <u>Informative</u>. Section 6.1.1 the 22Z verbiage was changed to "If no oversize, leave empty." Previously, "If either, leave empty".
14. <u>Informative</u>. Section 6.1.1, 24Z field added verbiage "Currently, used only for FedEx Express."
15. <u>Informative</u>. Section 6.1.1, 25Z field added verbiage "Currently, used only for FedEx Express."
16. <u>Correction</u>. Section 6.6. " The valid 99Z fields are GHAZ02 or GRET01. This record definition will also be used for intra-Canadian shipments."
17. <u>Informative</u>.   Sections 6.6.2 and 6.7.2, the 12Z field description changed to read: "This field is mandatory for Home Delivery packages." The " and Appointment Delivery." was deleted.
18. <u>Informative</u>. Section 6.6.2: Change to 23Z language. Added "This field is conditional on whether Residential Flag is selected by the Shipper."
19. <u>Informative</u>. Sections 6.6.2, 6.7.2, and 6.8.2, field descriptions for 22Z.   Added: "This field is conditional on whether OS1/OS2/OS3 Indicator or Add Handling Flag is selected by the Shipper."
20. <u>Correction</u>. Section 7. Add in GHAZ02 as defined header record.

21. Correction. Section 7.5.2, Table 18 for the Hazardous Material #2, the "Exact Wt." changed to "Exact Quantity".
22. Informative. Section 7.8, Table 21. Changed "FedEx Ground full bar code umber" to read "FedEx Ground original full bar code number".
23. Informative. Section 9, added to the bullet points " Impact to operations".
24. FedEx Ground Request – Informative: Clarification for use of K, 9K & 10K reference fields in 6.1.1.
25. FedEx Ground Request – Informative: Section 6.6 the 26Z changed to be listed as conditional. In the footnote it says "Only used for customer automation generated labels".
26. Informative: FedEx Express Handling Codes and Sum Values overview added to Appendix
27. Informative: ISO Country Codes table added to Appendix
28. FedEx Ground Request – Informative/Change: Rounding rules for currency values for FedEx Ground in 20Z field. All values will be rounded to nearest integer.
29. Correction – EIOP01 99Z field was listed as Optional. Correct value is Mandatory.
30. Correction – SCAC should be listed as Standard Carrier Alpha Code.
31. Correction - Section 5.1 SSCC-18 cannot stand alone on the label.
32. Change – Section 5. "Vendor Id" changed to "Pickup Location (carrier assigned shipper Id)". "Container Id" changed to "Tracking Number'.

10.11 Requested Changes

1. FedEx Ground Request - Informative: Section 6.6 99Z discussion for the FedEx Ground Domestic.
   Need language. No other issues with request.
2. FedEx Ground Request – Change. Sections 6.6 Table 9, 6.7 Table 10, & 6.8 Table 11, all of the reference fields need to be increased to 30 digits per Holly Hardman research.
   Request cannot be implemented due to space restrictions.
3. FedEx Ground Request - Informative: Section 6.7.2, 99Z discussion for the FedEx Ground International -GI002?
   Need language, no other issues.
4. FedEx Ground Request - Change: Section 7.6 - GINT01 definition. The SED field is conditional based on US Export or Import. Need two new definitions that will replace GINT01; Export and Import. This follows the same format currently implemented for FedEx Express.
5. FedEx Ground Request - Change: Retire GRET01, replace with new GRET02 to also include RMA#