ATIS-0300044

ATIS Standard on -

GUIDELINE FOR THE IDENTIFICATION AND BAR CODE LABELING OF CABLE REELS

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ATIS-0300044, *Guidelines for the Identification and Bar Code Labeling of Cable Reels*

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ATIS-0300044

ATIS Standard on

Guidelines for the Identification and Bar Code Labeling of Cable Reels

Alliance for Telecommunications Industry Solutions

Approved August 2015

Abstract

The primary purpose of this document is to establish a Cable Reel ID Code as a standard identification scheme for coding cable reels to identify ownership and reel size and to provide a means of uniquely identifying a single cable reel from others bearing the same Owner and Size code.

Foreword

The Alliance for Telecommunications Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The mission of the AIDC is to establish guidelines for common shipping labels, product marking labels, product changes and software issuance standards. These common guidelines simplify the receiving, shipping, transportation and tracing of telecommunications products through company and industry business processes and the global supply chain.

The mandatory requirements are designated by the word *shall* and recommendations by the word *should*. Where both a mandatory requirement and a recommendation are specified for the same criterion, the recommendation represents a goal currently identifiable as having distinct compatibility or performance advantages. The word *may* denotes an optional capability that could augment the standard. The standard is fully functional without the incorporation of this optional capability.

Suggestions for improvement of this document are welcome. They should be sent to the Alliance for Telecommunications Industry Solutions AIDC, 1200 G Street NW, Suite 500, Washington, DC 20005.

At the time of consensus on this document, AIDC, which was responsible for its development, had the following leadership:

R. Yanders, CenturyLink

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Guidelines for the Identification and Bar Code Labeling of Cable Reels

1 Scope & Purpose

1.1 Scope

The scope of this document is limited to resolving cable reel identification problems and the exchange of cable reel data between business trading partners within the telecommunications industry.

The label specified in this document could be created containing an RFID Tag. Specifications for this tag can be found in ATIS-0300096, *RFID Guideline for Product, Product Package and Transport Unit Tagging*.

For creating shipping manifests for cable reels, see ATIS-0300045, *Machine-readable Manifest Guidelines for Cable Reels*.

1.2 Purpose

The primary purpose of this document is to establish a Cable Reel Identification Code (Cable Reel ID) as a standard identification scheme for coding cable reels to identify ownership and reel size and to provide a means of uniquely identifying a single cable reel from others bearing the same Owner and Size code.

The Cable Reel ID can be utilized by the cable purchaser to track the cable reels from the time they are received and subsequently moved to various transfer points, including company and customer locations, until the empty cable reels are returned to the cable provider. Additionally, the scanned data can be entered into a database allowing a computer system to associate the type and amount of cable on a specific cable reel. The reels may be those owned by the cable provider or the company purchasing the cable.

The computer system can track the incoming cable reels and decrement the cable balance on a reel by reel basis as cable cuts are made. If cable is removed from a cable provider's reel and transferred to a company-owned reel; the computer system can be used to track these transfers. Accordingly, the computer system can assist in the tracking of assets represented by the cable provider's or company owned reels as well as the inventory represented by the cable.

This system can greatly facilitate the return of empty cable reels to minimize the charges imposed by the cable provider when specific cable reels are not returned within a specified time frame.

This document specifically addresses the coding scheme for cable reel identification, the bar code representation of the data, and labeling requirements.

These requirements were developed primarily for cable reels constructed of metallic materials and intended for use as returnable containers.

2 Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ANSI MH10.8.2.2010, *Data Identifier and Application Identifier Standard* [1]

ANSI MH10.8.7.2005, *Labeling and Direct Product Marking With Linear Bar Code and Two-Dimensional Symbols*[2]

ASTM D3330 / D3330M-04 (2010), *Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape*[3]

ASTM D5181-09, *Standard Test Method for Abrasion Resistance of Printed Matter by the GA-CAT Comprehensive Abrasion Tester*[4]

ASTM G154-12a, *Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials*[3]

ATIS-0300045.2008, *Machine-readable Manifest Guidelines for Cable Reels*[5]

ATIS-0300096.2008, *RFID Guideline for Product, Product Package and Transport Unit Tagging*[6]

ISO/IEC 15416:2000, *Information technology -- Automatic identification and data capture techniques -- Bar code print quality test specification -- Linear symbols*[7]

ISO/IEC 16388:2007, *Information technology -- Automatic identification and data capture techniques -- Code 39 bar code symbology specification*[8]

MIL-PRF-61002B w/ Amendment 2 (2013), *Pressure-Sensitive Adhesive Labels For Bar Coding* [9]

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[1] This document is available from the American National Standards Institute at < www.ansi.org >.

[2] This document is available from the American Society for Testing and Materials (ASTM) International at < http://www.astm.org >.

[3] This document is available from the American Society for Testing and Materials (ASTM) International at < http://www.astm.org >.

[4] This document is available from the American Society for Testing and Materials (ASTM) International at < http://www.astm.org >.

[5] This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) at < https://www.atis.org/docstore/product.aspx?id=22960>.

[6] This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) at < https://www.atis.org/docstore/product.aspx?id=22978 >.

[7] This document is available from International Organization for Standardization (ISO) at < http://www.iso.org >.

[8] This document is available from International Organization for Standardization (ISO) at < http://www.iso.org >.

[9] This document is available from the Department of Defense ASSIST database < http://assistdoc1.dla.mil >.

3 Informative References

ATIS-0300006.2012, *Implementation Guide to Package Labeling*[10]

4 Materials

4.1 General Requirements

This specification contains performance criteria and durability requirements which labels shall meet or exceed to ensure the use and total functionality of pressure-sensitive labels in various climatic environments.

4.1.1 Classification

The labels furnished in accordance with this specification shall be of the following types, grades, styles, and compositions as specified in Section 1.2 (Classification) of MIL-PRF-61002B w/ Amendment 2 (2013)*: Pressure-Sensitive Adhesive Labels For Bar Coding*.

Types

- Type I - Blank label sheet(s)
- Type II - Blank label roll(s)
- Type III - Barcoded label(s) cut on sheet(s)
- Type IV - Barcoded label(s) cut on roll(s)
- Type V - Special (specify)

Grades

- Grade A - Multiple Durability Requirements (see Section 2.2.1)

Styles

- Style 1 - Non-Porous Surfaces

Composition

- Composition b - Plastic (with or without laminate) (includes materials such as polyester, mylar, vinyl, PVF (Polyvinyl Fluoride), etc.)
- Composition c - Polyamide (with or without laminate)

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[10] This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) at <https://www.atis.org/docstore/product.aspx?id=26145>.

4.1.2 Materials

The labels shall be manufactured from such materials and by such processes as to ensure performance compliance with this specification.

Bar code labels shall be constructed of materials designed for worldwide outdoor use. Labels shall remain scannable after being subjected to extreme sunlight, dirt, water and chemicals normally found in cable manufacturing environments and on the road during transportation.

4.1.3 Design

The labels shall be designed to ensure performance compliance with this specification for the specified type, grade, composition, and style. Blank label stock shall not require a laminate. A laminate may be required to meet the durability requirements for a given grade of preprinted label. When a laminate is used, the final composite label design shall be designated by its basic substrate material and tested as composite unit label.

4.1.4 Construction

The labels shall be made from materials conforming to Section 2.1.2. The labels shall be completely coated on the back side with a uniform film of adhesive and shall be mounted on a backing sheet. The labels shall be furnished in the form of individual labels, sheets, or rolls, as specified in the Contract or Order. Labels furnished in sheet form shall be die-cut to facilitate removal of individual labels from the backing sheet. Types II and IV labels (see Section 2.1.1) furnished in roll form shall be die-cut or butt-cut and shall be individually attached to a backing sheet strip which is uniformly wound on a convolute or spiral wound paperboard core. The quantity of labels per sheet or roll shall be in accordance with standard commercial practice unless otherwise specified. Exceptions to the above mentioned core are the compositions (see Section 2.1.1) which are too rigid to be wound. Thickness of the label stock shall be in accordance with standard commercial practice unless otherwise specified.

4.1.5 Adhesive

The adhesive shall be pressure-sensitive, liquid insoluble, and shall require no moisture, heat, or other preparation prior to, or after application to, clean, dry surfaces. Any other surface conditions or method of application shall be specified. There shall be no excessive bleeding of adhesive from the edges of the labels (see 2.2). Bar code labels attached with chemical adhesives shall be capable of adhering to a smooth painted surface or bare metal surface that is clean and dry (free of rust, dirt, oil, moisture, etc.).

4.1.6 Temperature

4.1.6.1 Installation Temperature

The adhesive being utilized must conform to the characteristics of the specified Grade and Style (see Section 2.1.1). Labels shall be applied at temperatures above 40 degrees F and less than 110 degrees F.

4.1.6.2 In-Service Temperature

Labels shall remain serviceable through temperature ranges of approximately minus 50 degrees Fahrenheit to plus 200 degrees Fahrenheit; lower than minus 46 degrees C or higher than 43 degrees C.

4.1.7 Backing Sheet

The backing sheet shall be coated with a suitable release coating that will provide adequate converting and dispensing of the pressure-sensitive adhesive coated facestock.

4.1.8 Dimensions

The overall size of the label shall be 2.0 inches (50.8mm) vertical by 5.0 inches (127mm) horizontal. See Appendix D: Exhibit, D.1.

4.1.8.1 Labels

The length and width dimensions of the individual labels shall be as specified in Section 2.1.8. The tolerance on dimensions up to and including 3.0 inches (76.2mm) shall be +/- 0.0312 inch (0.794mm). For dimensions over 3 inches (76.2mm), the tolerance shall be +/- 0.0625 inch (1.58mm). All tolerances shall be maintained unless other specified.

4.1.8.2 Sheets

When the labels are furnished in sheet form, the length and width dimensions of the individual sheets or labels shall be specified in the Contract or order. If not specified, the contractor shall make the decision based on standard commercial manufacturing practice.

4.1.8.3 Rolls

When the labels are furnished in roll form, the paperboard core of the roll shall have a minimum inside diameter of 3.0 inches (76.2mm) with a tolerance of +/- 0.625 inch (1.58mm), unless otherwise specified in the Contract or Order. The width of the core shall have a tolerance of +/- 0625 inch (1.58mm) or as specified in the Contract or order and shall be no smaller than the width of the roll.

4.1.8.4 Color

The labels shall have a white background with black printing. See Section 3.1 for bar code printing requirements.

4.1.8.5 Workmanship

Labels shall be free of adhesive on the printable surface. Label edges shall be smooth and clean cut. The labels shall be free from lint, dust, grit, spots, wrinkles, folds, holes, tears, and other imperfections. The backing sheet shall be free of die-cuts, slits, or any other defect that may affect serviceability.

4.1.8.6 Storage Markings

All packages of labels shall be marked with the type of storage, temperature range, and shelf-life (to include last usable date) that is required to ensure proper storage of the label stock(s). Also, due to some adhesive's short

shelf life, the contractor shall specify for each delivery the date when the adhesive was purchased. Labels, with adhesive that were purchased more than three months prior to delivery, will not be accepted unless the procuring prepared to use the labels before the expiration of life date.

4.2 Performance Requirements

4.2.1 Label Grades

The grade performance of the label shall be Grade A, as defined by MIL-PRF-61002B. Grade A labels are intended for those applications where the labels will have to endure prolonged (longer than 2 weeks) outdoor conditions. Grade A labels shall meet the following performance requirements:

- UV Light Condensation
- Adhesion
- Solvent Resistance
- Heat Aging
- Detergent Resistance
- Abrasion Resistance

4.2.2 Performance Test Parameters

The labels, when tested as specified for grade test requirements, shall show no evidence of smearing or erosion of the blank label stock, bar coded symbol, delamination, percentage loss of adhesion, discoloration, wrinkling, cracking, or any effect which is detrimental to the label. Bar code labels shall remain readable and conform to the print quality requirements of ISO/IEC 15416, *Information technology -- Automatic identification and data capture techniques -- Bar code print quality test specification -- Linear symbols*. Non-conformance to these performance requirements shall be construed as loss of adhesion to the substrate and/or non-readability of the bar code symbol either of which will constitute failure and the performance test shall be terminated. The following tests shall be performed:

- Abrasion Resistance
- Solvent Resistance
- Detergent Resistance
- Ultraviolet Resistance Adhesion

These tests are detailed in Section 4.3.

4.3 Verification

4.3.1 Conformance Inspection

Unless otherwise specified in the contract or purchase order, the supplier is responsible for performance of all tests specified herein and the verification of the results thereof. All items supplied must meet or exceed all stated performance requirements of this specification as set forth. Upon verification of test results, the supplier shall

make available, if requested by the customer, a written certification that supplied labels conform to the set forth requirements of this specification. The customer reserves the right to perform any or all inspections deemed necessary to ensure that items supplied are as required by the Contract or Purchase order.

4.3.2 Performance Tests

The labels, upon completion of each performance test specified below, shall be examined to determine whether they meet or exceed compliance with this specification.

4.3.2.1 Abrasion Resistance

A. Apparatus

The apparatus shall consist of a Teledyne Taber Abraser Model 5130 (based on the ANSI MH10.8.7, *Labeling and Direct Product Marking With Linear Bar Code and Two-Dimensional Symbols*, Annex A, Section A.3.5) or a GA-CAT Comprehensive Abrasion Tester as described in ASTM D5181-09, *Standard Test Method for Abrasion Resistance of Printed Matter by the GA-CAT Comprehensive Abrasion Tester*, or equivalent.

B. Standard Conditions

Standard conditions shall be a temperature of 73.5 degrees F +/- 2 degrees F (23 degrees C +/- 1.1 degrees C) and a relative humidity at that temperature of 50 +/- 4 percent.

C. Preparation of Test Labels

Prior to testing, the label and specimen mounting sheets shall be conditioned for testing for a minimum of 24 hours in an atmosphere maintained at standard conditions (see B above).

D. Method

Test labels shall be tested to meet or exceed the following test criteria as described in ASTM D 5181: Place two labels on a piece of back-up bond paper, equally spaced across the paper with the bar code in the direction of abrasion using a 600 grit receptor. Mount both the sample and receptor using the adhesive backed foam. The GA-CAT Abrasion Tester shall be set to the following parameters: cycle - 30 seconds, frequency - 2 Hz, span - 1.5 inches, offset - .13 inches, side pressure 10 Lbs., and top pressure - 50 Lbs.

NOTE: The initial cycle may require reduced pressure settings when a new Receptor is used (side pressure - 7 Lbs., top pressure 45 Lbs.). Run one cycle at a time to initiate abrasion resistance of the bar code label. Four individual cycles shall be run during each test to determine bar code acceptance. A cool off period of 1 minute or more is required between cycles. Acceptance to conformance will be readability of the bar code label after four cycles.

4.3.2.2 Solvent Resistance

Determine the resistance of material to the solvents specified herein by immersing one test specimen in a glass exposure container. Apply each 1 inch by 4 inch (25mm by 102mm) label to the test panels.

A. Preparation of Test Labels and Test Panels

Test labels and test panels shall be prepared as specified in Section 4.3.2.1, paragraph C.

B. Method

The test specimens shall be immersed within + 1, -0 minutes in the solvent specified below. The solvents shall be maintained at 75 degrees F +/- 10 degrees F (24 degrees C +/- 6 degrees C). At the end of the soaking period, the labels shall be removed from the solvent, and the labels shall be examined immediately to determine

compliance. If a test panel has not been specified, smooth plate glass panels approximately 3 inches by 9 inches (76mm by 229mm) in size will be used.

Solvents and immersion time shall be as follows:

Solvents	Immersion Time
Kerosene	10 minutes
Turpentine	10 minutes
Tuluol	1 minute
Zylol	1 minute
Methyl Alcohol	1 minute

At the end of the immersion period, remove the test panels from the containers and allow them to dry before examining for evidence of puckering, blistering, or dissolving of the exterior film and adhesive. Failure of any specimen to meet these requirements and those mentioned in Section 4.2 shall be cause for rejection.

Additional resistance tests to other solvents may be required as specified in the Contract or Order.

4.3.2.3 Detergent Resistance

A. Preparation of Test Labels and Test Panels

Test labels and test panels shall be prepared as specified in Section 4.3.2.1, paragraph C.

B. Method

The test specimens shall be immersed for 15 minutes +/- 1 minute in a solution of 0.7 ounces (20 grams) of detergent powder, conforming to A-A-17 (NSN 7930-00-588-1111) dissolved in 34 oz. (1,000 ml) of distilled water. The detergent solution shall be maintained at a temperature of 120 degrees F +/- 10 degrees F (49 degrees C +/- 6 degrees C) during the soaking period.

4.3.2.4 Ultraviolet (UV) Light Condensation

A. Apparatus

The apparatus shall consist of an Ultraviolet (UV) Light Condensation cabinet as described in ASTM G154-12a, *Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials*, or equivalent.

B. Preparation of Test Labels and Test Panels

The labels and test panels shall be prepared as specified in Section 4.3.2.1, paragraph C and ASTM G154-12a. Porous test panels, such as wood and fiberboard, shall be backed with MIL-B-131 barrier material.

C. Method

The test labels shall be positioned in the test chamber and tested in accordance with the procedure specified in ASTM G154-12a. Exposure time shall be a total of 96 hours using an 8 hour repeating program cycle of 4 hours of light and 140º F (60ºC) followed by 4 hours of condensation at 122º F (50ºC).

4.3.2.5 Adhesion

A. Apparatus

The apparatus shall consist of a holding fixture that will rigidly support test panels with their label mounting surfaces in a horizontal position.

B. Preparation of Test Labels and Test Panels

Prior to testing, test label and test panels shall be conditioned for a minimum of 24 hours in an atmosphere maintained at standard conditions (see Section 4.3.2.1 paragraph C). Style 1-test panels (stainless steel), as specified in ASTM D3330 / D3330M-04, *Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape*, shall be cleaned with diacetone alcohol (non-residual, technical grade or better) using a lint-free absorbent material such as surgical gauze, wiped dry with fresh absorbent material, and cleaned twice again with 95% methyl alcohol and fresh absorbent material. Style 2 and 3 test panels shall be wiped free of dust and other surface contaminates using lint-free absorbent material, such as surgical gauze or equivalent materiel so as not to contaminate test specimen. Style 2 test panels shall utilize the Standard Reference Material 1810a[11], attached to a rigid panel with double coated tape.

C. Method

Before removal from their release liners, each label shall be trimmed lengthwise to 0.5 inch (12.7mm) width (if applicable). Place a 1 inch by 2 inch (25mm by 51mm) strip of paper/chipboard with a hole in one end for attaching a weight on a cleaned surface of the test panel. Peel each test label from its release liner and gently place the label, adhesive side down, on a test panel and over the 1 inch (25mm) edge of paper/chipboard such that approximately 1.125 inch (28.6 mm) of the label is in contact with the test panel and the remaining length of test label is on the paper / chipboard and approximately centered with the 1 inch (25.4mm) edge. Secure the test label to the test panels and paper/chipboard strips by rolling each label once in each lengthwise direction with a steel, rubber-covered roller as described in ASTM D 3330. If any bubbles or wrinkles appear on the label, discard it and replace it with a new one using the same procedure. Place the panels with the labels on the bottom surface in the holding fixture and gently attach a 0.88 oz +/- 0.04 oz. (25 gram* +/- 1 gram) weight to the free end of the paper/chipboard strips such that the line of force of the 0.88 oz (25 gram) weight and the test panel form an angle of approximately 90 degrees. The weight shall remain as a peeling force for 4 hours +/- 5 minutes.

5 Bar Code & Human Readable Interpretation Requirements

5.1 General

5.1.1 Bar Code Symbology

Code 39 is the recommended symbology for this label. The Code 39 symbology shall be in accordance with ISO/IEC 16388, *Information technology -- Automatic identification and data capture techniques -- Code 39 bar code symbology specification,* and the data character set shall contain 43 characters: 0 to 9, A-Z, -, ., %, $, and space.

[11] Contact the National Institute of Standards and Technology (NIST) for more information at < http://www.nist.gov >.

5.1.2 Human Readable Interpretation (HRI)

The human readable interpretation of the bar code symbol shall be printed in bold face directly below the bar code symbol and shall be 0.75 inches +/- 0.01 inches (19mm +/- 2mm) in height. The human readable interpretation of the bar code shall not include start/stop characters nor the Data Identifier.

5.1.3 Code Density

For this application, a density of 3.6 characters per inch (CPI) (1.4 characters per cm) with a 3 to 1 narrow element ratio shall be used. The narrow elements shall be 17 mils (0.017 inch) (0.43 mm) in width.

5.1.4 Quiet Zone

A quiet zone of 0.25 inch (6.35mm) (minimum) shall precede and follow the bar code symbol.

5.1.5 Print Quality

General requirements and methodologies for bar code print quality measurements shall be in accordance with the ISO/IEC 15416.

5.1.6 Reflectance Requirements

Reflectance requirements shall be met in the 660 nanometers (NMS) +/- 10 nms (visible light) spectral band. The ISO/IEC 15416 methodology shall be used to measure conformance to reflectance requirements.

5.1.7 Print Quality Level

When printed with the required X Dimension of 0.017 inches (0.43 mm), the bar code shall have a minimum symbol grade of 1.5/10/660, where the minimum grade is C (1.5), measured with an aperture size of 0.010 inch (0.25 mm), with a light source wavelength of 660 nm ±10 nm. The methodology for measuring the print quality shall be as specified in ISO/IEC 15416.

The minimally acceptable overall symbol grade of C (1.5) applies to the final symbol on the product at the point of receipt. It is recommended that the overall symbol grade, at the point of printing the symbol, be equal to or exceed B (2.5) to allow for process variations and possible degradation from packaging, storage, shipping, and handling.

6 Data Requirements

6.1 Data Definitions

The complete Cable Reel Identification Code consists of three data fields; Owner Code, Serial Number, and Size Code. These three fields shall be concatenated into one continuous field or string of characters and shall be preceded by the Data Identifier “1B”.

6.1.1 Data Identifier

This is a two character code immediately following the start character that identifies the data following.

The Data Identifier "1B" is the only Data Identifier to be used for this application. Data Identifiers are listed in ANSI MH10.8.2, *Data Identifier and Application Identifier Standard*.

The Data Identifier is used only with the bar code symbol and shall not be shown when cable reel data appears in a human readable format. For additional information, see Section 5, Label Requirements.

6.1.2 Owner Code

The Owner Code identifies the owner of the cable reel. This code consists of two alpha characters and will be formulated and assigned by the Owner Code Maintenance Agent. A table of Owner Codes is included in this document (see Appendix B).

6.1.3 Serial Number

This serial number is assigned by the owner of the reel and must not be duplicated on another reel with the same Owner Code. The Serial Number in combination with the Owner Code provides each reel with a unique identity. The Serial Number is composed of 6 alpha/numeric characters.

6.1.4 Reel Size Codes

The Reel Size Code identifies the size of the reel in terms of overall height, overall width, and diameter of the drum. This code consists of three alpha characters. A Table of Reel Size Code Characters appears in Appendix C.

6.2 Data Field Requirements

6.2.1 Data Identifier

Name of Field:	Data Identifier
Field Length:	Fixed length of two characters
Required/Optional:	Required only when cable reel data is represented in a bar code symbol.
Data Content:	The two characters "1B" will always be used to identify cable reel data in a bar coded format.
Restrictions:	This field is not to be used when cable reel data is presented only in a human readable format.

6.2.2 Owner Code

Name of Field:	Owner Code
Field Length:	Fixed length of two characters
Required/Optional:	Required Data

Data Content: Two Alpha Characters are required. No blanks or special characters are permitted.

Restrictions: Only codes issued by the maintenance agent will be considered valid. See Appendix B for Owner Codes.

6.2.3 Serial Number

Name of Field: Serial Number

Field Length: Fixed length of six characters

Required/Optional: Required data

Data Content: Six alpha/numeric characters are required. No blanks or special characters are permitted.

Restrictions: The serial number cannot be duplicated on another reel with the same Owner Code. Alpha characters “I” and “O” are not permitted.

6.2.4 Size Code

Name of Field: Size Code

Field Length: Fixed length of three characters. No blanks or special characters are permitted.

Required/Optional: Required data

Data Content: Three alpha/numeric characters are required. No blanks or special characters are permitted.

Restrictions: Only code characters specified in Appendix C, Table of Reel Size Code Characters, are valid.

7 Label Requirements

7.1 General

The label shall conform to the following:

- All bar coded data shall be concatenated and contained in a single line across the label.
- The human readable interpretation shall be concatenated and contained in a single line across the label and directly below the bar code symbol.
- The label shall not have any border lines.
- The title line of the bar code symbol shall begin with the Data Identifier and shall be enclosed in parenthesis, e.g., (1B).
- The title line of the bar code symbol shall be immediately above the bar code symbol and be left justified.

7.1.1 Title Line for Bar Code Symbol

The title line shall be printed in bold face immediately above the bar code symbol and left justified. The title must be displayed in human readable characters and shall be 0.06 inches +/- 0.005 inches (1.5 mm +/- 0.13mm) in height. See Appendix D: Exhibit D.1.

7.1.2 Title Line for Bar Code Symbol with Removal Warning

A "DO NOT REMOVE" warning may be included on the title line and to the right of the title and separated by spaces and a hyphen. It shall be printed in bold face and shall be 0.06 inches +/- 0.005 inches (1.5 mm +/- 0.13mm) in height.

Example: (1B) REEL ID - DO NOT REMOVE

7.2 Size of Label

The overall size of the label shall be 2.0 inches vertical by 5.0 inches horizontal (25mm vertical by 127mm horizontal). See Appendix D: Exhibit D.1.

7.3 Placement of Label on Reels

Bar code labels shall be affixed to both sides of the cable reel. One label shall be placed on the side adjacent to the cable starting hole for easy reference in finding the label. The other label shall be placed on the opposite side, 180 degrees from the first label. Both shall be located between the flutes and midway between the rim and the drum. The labels shall be placed so the Owner Code is nearest to the drum. See Appendix D: Exhibit D.2, Placement of Label on Reel.

7.4 Life Expectancy Requirements

Labels are expected to remain serviceable (scannable) for a minimum of 5 years when applied per the specifications in this document.

8 Maintenance Agent – Owner Codes

8.1 Duties of Maintenance Agent - Owner Codes

In the administration of Owner Codes, the Maintenance Agent will have the sole authority to:

- Establish procedures for the assignment of codes.
- Advise affected owners and the Secretariat of assigned Owner Codes.
- Maintain records of Owner Codes.

8.2 Owner Codes

- A cable reel owner may be assigned only one Owner Code.
- A cable reel owner may request the assignment of a particular two character Owner Code (see attached ATIS Cable Reel Owner Code Form). The maintenance agent will give due consideration to such a request, but will formulate all Owner Codes at its sole discretion.

8.3 Procedures

Requests for Owner Code assignments will be made directly to the maintenance agent, in writing, at its designated guidelines administration address.

Appendix A: Glossary & Acronyms

A.1 Definitions/Glossary

For a list of common communications terms and definitions, please visit the ATIS Telecom Glossary, which is located at < http://www.atis.org/glossary >.

A.1.1 Alphabetic - The character set containing the letters A through Z inclusive. It does not include special characters or punctuation marks.

A.1.2 Alpha/numeric - The character set containing the letter A through Z inclusive and the digits 0 through 9 inclusive. Special characters or punctuation marks are not considered alpha/numeric characters.

A.1.3 Bar - The darker element of a bar code symbol.

A.1.4 Bar Code - An array of parallel rectangular bars and spaces that together represent data elements or characters in a particular symbology.

A.1.5 Bar Code Character - A single group of bars and spaces which represent an individual letter, number, punctuation mark, or other symbol.

A.1.6 Bar Code Density - The number of data characters which can be represented in a linear unit of measure. Bar code density is often expressed in characters per inch (CPI). CPI is a function of the "X" dimension, element ratio, and intercharacter gap.

A.1.7 Bar Code Symbol - A graphic (printed or photographically reproduced) bar code composed of parallel bars and spaces of various widths. A bar code symbol contains a leading quiet zone, start character, data characters including a check digit (character) (if any), stop character, and a trailing quiet zone.

A.1.8 Bar Code Symbol Length - The distance between the outside edges of the quiet zones.

A.1.9 Bar Height - The bar dimension perpendicular to the bar width. Also called the length.

A.1.10 Bar Width - The perpendicular distance across a bar measured from a point on one edge to a point on the opposite edge. Each point will be defined as having a reflectance that is 50 percent of the difference between the background and bar reflectance.

A.1.11 Bar Width Ratio - The ratio of the widest to the narrowest bar width within a bar code.

A.1.12 Cable Reels - Reusable containers used to package and transport telecommunications cable products.

A.1.13 Cable Reel Identity - Composed of three concatenated, mandatory, fixed length data elements.

A.1.14 Cable Reel Size - Data element composed of alpha characters to indicate the height, width, and drum diameter. See Appendix C, Section 9, Table of Reel Size Code Characters.

A.1.15 Character - A letter, digit, or other special form that is used as part of the organization, control, or representation of data. A character is often in the form of a special arrangement of adjacent or connected strokes.

A.1.16 Characters Per Inch - The number of bar coded characters that are (CPI) displayed in each inch of bar code.

A.1.17 Character Set - Those characters which are available for encoding within the bar code symbol.

A.1.18 Code 39 - The 3 of 9 bar code is a variable length, discrete, self-checking, bi-directional, alpha/numeric symbology. Its character set contains 43 meaningful characters: 0-9, A Z, , ., $, /, +, % and space. Each character is composed of nine elements: five bars and four spaces. Three of the nine elements are wide (binary value 1) and six elements are narrow (binary value 0). An additional character (*) is used for both start and stop delimiters.

A.1.19 Data Field - The specific portion or area of a label designated to contain human readable, bar coded, or graphic information.

A.1.20 Data Identifier - A specified character(s) which defines the specific intended use of the data that immediately follows. The identifier shall be an alpha character preceded by up to three numeric characters.

A.1.21 Density - See "Bar Code Density".

A.1.22 Element - In a bar code symbol, a single bar or a space.

A.1.23 Human Readable - The interpretation of the encoded bar code interpretation (HRI) data presented in a human readable font.

A.1.24 Intercharacter Gap - The space between the last element of one character and the first element of the adjacent character of a discrete bar code symbol.

A.1.25 Mandatory Data Field - A data field which must always contain data.

A.1.26 Nominal Width - The ideal width excluding any tolerance. For a printed bar code symbol, the average width for each element size.

A.1.27 Numeric - The character set containing the digits 0 through 9 inclusive. It does not include special characters or punctuation marks.

A.1.28 Opacity - The property of a material to obstruct the transmission of light and prevent show-through.

A.1.29 Owner Code - Data element that consists of two alpha characters to indicate the owner of the cable reel. See Appendix B, Table of Owner Code Assignments.

A.1.30 Print Quality - The measure of compliance of a bar code symbol to the requirements of dimensional tolerance, edge roughness, spots, voids, reflectance, quiet zone, and encodation.

A.1.31 Quiet Zone - A clear space, which precedes the start character of a bar code symbol and follows the stop character. Sometimes called the "Clear Area".

A.1.32 Reel ID - See Cable Reel Identity.

A.1.33 Reflectance - The ratio of the amount of light of a specified wave length or series of wave lengths, reflected from a test surface to the amount of light reflected from a barium sulfate or magnesium oxide standard.

A.1.34 Scanner - An optical and electronic device that scans bar code symbols and outputs the bar coded information in the form of electrical signals suitable for input to a data collection device.

A.1.35 Serial Number - The serial number used in combination with the Owner Code provides each reel with a unique identity. The serial number is composed of six alpha/numeric characters.

A.1.36 Size Code - See Cable Reel Size.

A.1.37 Space - The lighter element of a bar code usually formed by the background between bars.

A.1.38 Spot - The undesirable presence of ink or dirt in a space, intercharacter gap, or quiet zone.

A.1.39 Start/Stop Character - A special bar code character or characters that provide the scanner with start and stop reading instructions as well as scanning direction indicator. The start character is normally at the left hand end of a horizontally oriented bar code symbol. The stop character is normally at the right hand end of a horizontally oriented bar code symbol.

A.1.40 Substrate - The surface on which a bar code symbol is printed.

A.1.41 Symbology - A discrete set of characters used to represent and transmit information, e.g., Morse code, Code 39.

A.1.42 X Dimension - The intended width of the narrow element. The narrow bar and the narrow space are equal in Code 39.

Appendix B: Table of Owner Code Assignments

Code	Company
AF	ALCOA FUJIRURA
AL	ALCATEL-LUCENT (formerly ALCATEL)
AS	AT&T (formerly AMERITECH)
AT	AT&T
BA	VERIZON (formerly BELL ATLANTIC)
BC	BELDEN CORP
BI	BICC TELECOM
BR	BRAND REX
BS	AT&T (formerly BELLSOUTH)
BT	BRITISH TELECOMMUNICATIONS
CC	CANSTAR
CI	CINCINNATI BELL
CS	CABLE SERVICES INTERNATIONAL
CX	CONDUMEX S.A. de C.V.
DN	DAINICHI NIPPON
EB	ENSIGN BICXFORD
EC	EOTEC CORP
ER	ERICSSON LIGHTWAVE (No longer in business)
FG	FITEL GENERAL
GC	GENERAL CABLE
GS	GOLD STAR CABLE
GT	GENERAL TELEPHONE
IT	ITT ELECTRO OPTICAL PRODUCTS
KM	KMM TELECOMMUNICATIONS
MC	MADISON CABLE
NT	NORTEL NETWORKS (Formerly NORTHERN TELECOM)
NY	VERIZON (Formerly NYNEX)
OC	OPTICAL CABLE CORP

PB	AT&T (Formerly PACIFIC BELL)
PC	PIRELLI
SE	SUMITOMO ELECTRIC
SN	AT&T (Formerly SOUTHERN NEW ENGLAND TELEPHONE)
SR	SIECOR CORP
ST	STERLIGHT OPTICAL TECHNOLOGIES
SW	AT&T (Formerly SOUTHWESTERN BELL)
SX	ESSEX GROUP
TF	TIMES FIBER
US	CENTURYLINK (Formerly U S WEST and QWEST COMMUNICATIONS)
VA	VALTEC
VZ	VERIZON

Appendix C: Table of Reel Size Code Characters

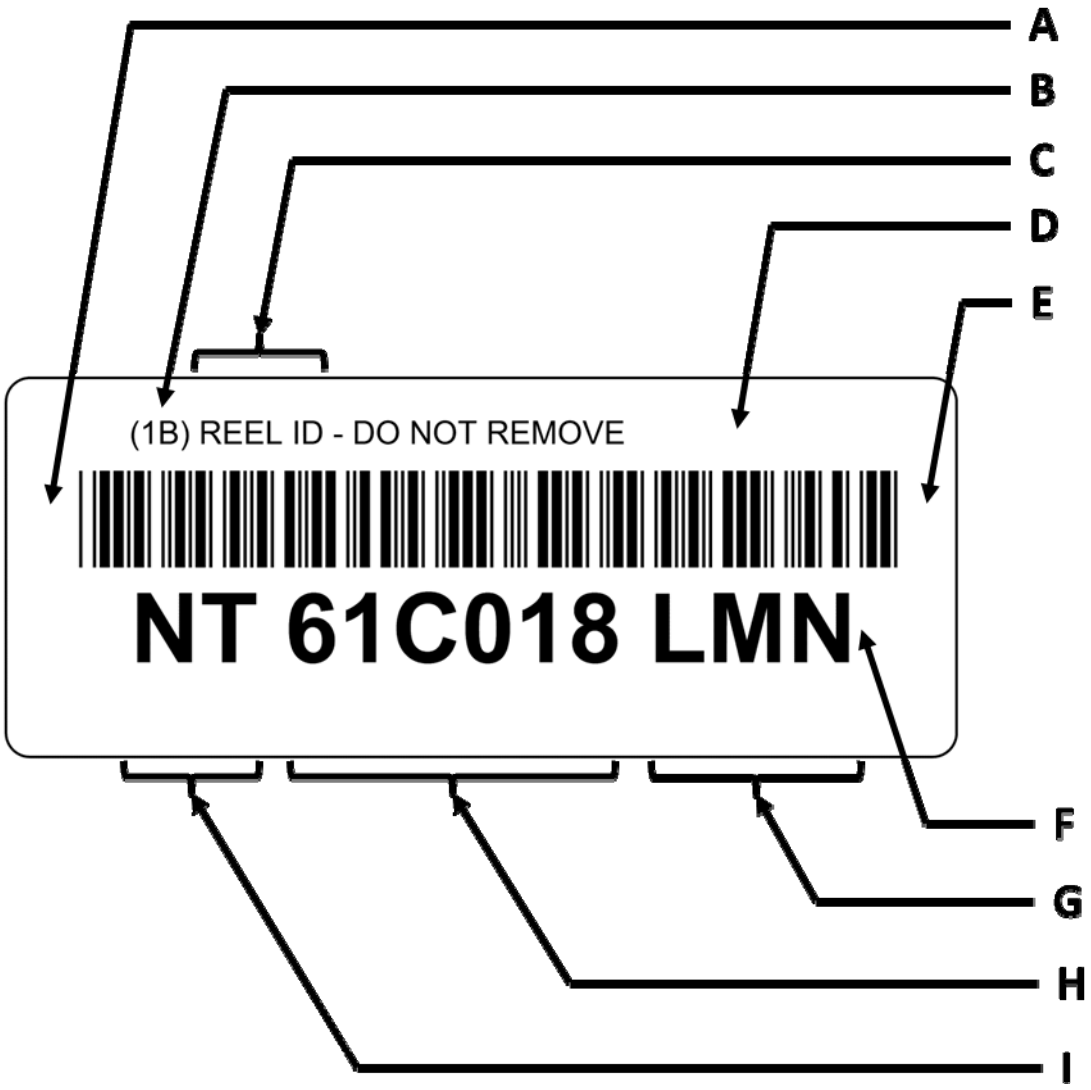
FIRST CHARACTER TOTAL HEIGHT, INCHES [CENTIMETERS]		SECOND CHARACTER TOTAL WIDTH, INCHES [CENTIMETERS]		THIRD CHARACTER DRUM DIAMETER, INCHES [CENTIMETERS]	
Code Characters	Range	Code Characters	Range	Code Characters	Range
A	0 to 30 [0 to 76.2]	A	0 to 12 [0 to 30.48]	A	0 to 12 [0 to 30.48]
B	30.1 to 35 [76.45 to 88.9]	B	12.1 to 15 [30.73 to 38.1]	B	12.1 to 15 [30.73 to 38.1]
C	35.1 to 40 [89.15 to 101.6]	C	15.1 to 18 [38.35 to 45.72]	C	15.1 to 18 [38.35 to 45.72]
D	40.1 to 45 [101.85 to 114.3]	D	18.1 to 21 [45.97 to 53.34]	D	18.1 to 21 [45.97 to 53.34]
E	45.1 to 50 [114.55 to 127]	E	21.1 to 24 [53.59 to 60.96]	E	21.1 to 24 [53.59 to 60.96]
F	50.1 to 55 [127.25 to 139.7]	F	24.1 to 27 [61.21 to 68.58]	F	24.1 to 27 [61.21 to 68.58]
G	55.1 to 60 [139.95 to 152.4]	G	27.1 to 30 [68.83 to 76.2]	G	27.1 to 30 [68.83 to 76.2]
H	60.1 to 65 [152.65 to 165.1]	H	30.1 to 33 [76.45 to 83.82]	H	30.1 to 33 [76.45 to 83.82]
I	65.1 to 70 [165.35 to 177.8]	I	33.1 to 36 [84.07 to 91.44]	I	33.1 to 36 [84.07 to 91.44]
J	70.1 to 75 [178.05 to 190.5]	J	36.1 to 39 [91.69 to 99.06]	J	36.1 to 39 [91.69 to 99.06]
K	75.1 to 80 [190.75 to 203.2]	K	39.1 to 42 [99.31 to 106.68]	K	39.1 to 42 [99.31 to 106.68]
L	80.1 to 85 [203.45 to 215.9]	L	42.1 to 45 [106.93 to 114.3]	L	42.1 to 45 [106.93 to 114.3]
M	85.1 to 90 [216.15 to 228.6]	M	45.1 to 48 [114.55 to 121.92]	M	45.1 to 48 [114.55 to 121.92]
N	90.1 to 95 [228.85 to 241.3]	N	48.1 to 51 [122.17 to 129.54]	N	48.1 to 51 [122.17 to 129.54]
O	95.1 to 100 [241.55 to 254]	O	51.1 to 54 [129.79 to 137.16]	O	51.1 to 54 [129.79 to 137.16]
P	100.1 to 105 [254.25 to 266.7]	P	54.1 to 57 [137.41 to 144.78]	P	54.1 to 57 [137.41 to 144.78]
Q	105.1 to 110 [266.95 to 279.4]	Q	57.1 to 60 [145.03 to 152.4]	Q	57.1 to 60 [145.03 to 152.4]
R	110.1 to 115 [279.65 to 292.1]	R	60.1 to 63 [152.65 to 160.02]	R	60.1 to 63 [152.65 to 160.02]

S	115.1 to 120 [292.35 to 304.8]	S	63.1 to 66 [160.27 to 167.64]	S	63.1 to 66 [160.27 to 167.64]
T	Reserved	T	66.1 to 69 [167.89 to 175.26]	T	66.1 to 69 [167.89 to 175.26]
U	Reserved	U	69.1 to 72 [175.51 to 182.88]	U	69.1 to 72 [175.51 to 182.88]
V	Reserved	V	72.1 to 75 [183.13 to 190.5]	V	72.1 to 75 [183.13 to 190.5]
W	Reserved	W	Reserved	W	Reserved
X	Reserved	X	Reserved	X	Reserved
Y	Reserved	Y	Reserved	Y	Reserved
Z	Reserved	Z	Reserved	Z	Reserved

Appendix D: Exhibits

D.1 Label Format

Size of label: 2.0 inches (50.8) vertical 5.0 inches (127mm) horizontal



A = Quiet Zone (leading) (Minimum of 0.25" [6.3mm])

B = Data Identifier (1B = CABLE REEL)

C = Title of Bar Code Symbol (REEL ID) (0.06" [1.5mm] vertical)

D = Bar Code Symbol (0.5" [12.7mm] vertical, 4.5" [114 mm] horizontal)

E = Quiet Zone (Trailing) (Minimum of 0.25" [6.3mm])

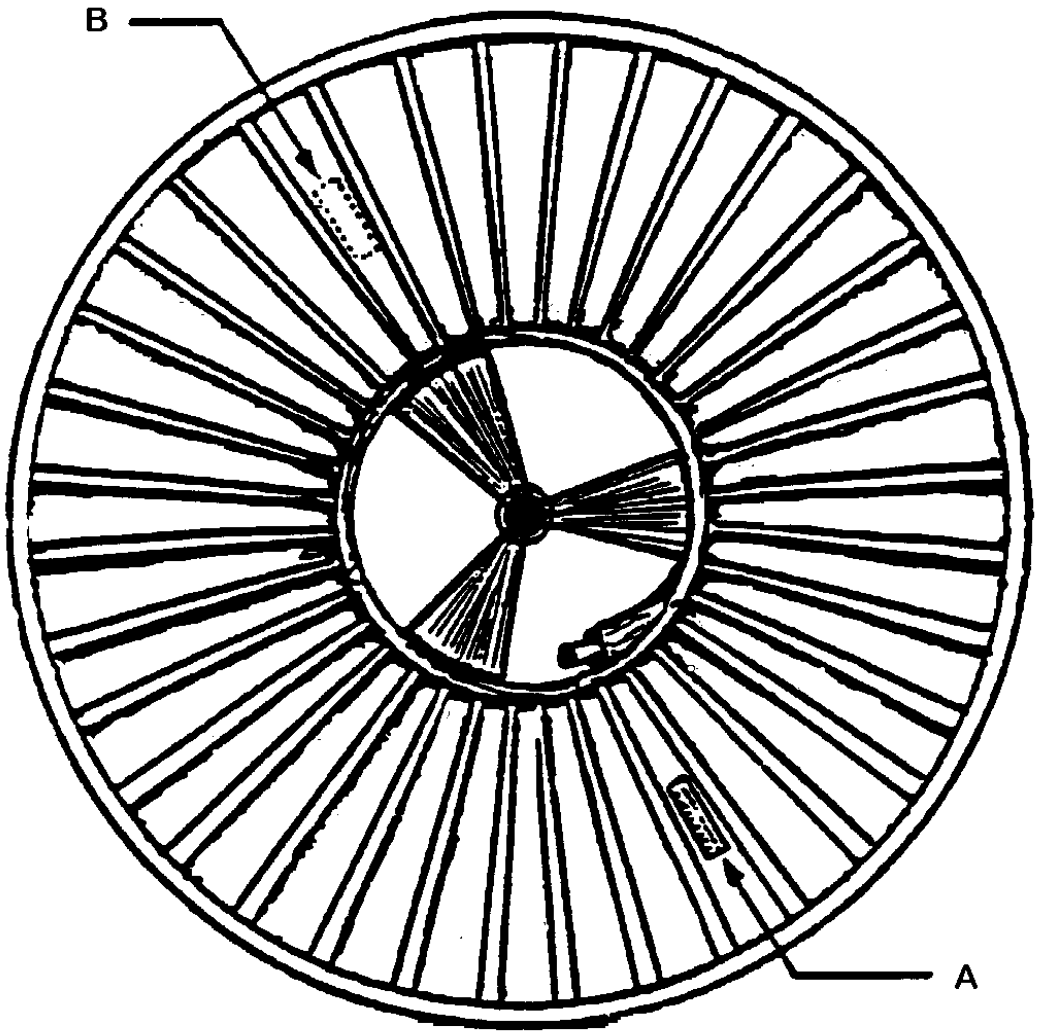
F = Human Readable Interpretation of Bar Code Symbol (0.75" [19.1mm] vertical, 4.5" [114mm] horizontal)

G = Reel Size Code

H = Serial Number

I = Owner Code

D.2 Placement of Labels on Reel



A = One label shall be placed adjacent to the cable starting hole.

B = A second label shall be placed on the reverse side and at 180 degrees from the outer label.

NOTE: Both labels shall be placed between the flutes and midway between the rim and the drum. The label shall be placed so the Owner ID code will be nearest to the drum.

Annex E: Maintenance Agent

The maintenance agent for this standard is:

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