



ANSI/ICEA S-92-675-2016(R2021)

STANDARD FOR COAXIAL AND COAXIAL/
TWISTED PAIR HYBRID AERIAL SERVICE
WIRES TECHNICAL REQUIREMENTS

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**ICEA STANDARD FOR COAXIAL AND
COAXIAL/TWISTED PAIR HYBRID AERIAL
SERVICE WIRES TECHNICAL
REQUIREMENTS**

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FOREWORD

(This Foreword is not part of this Standard.)

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The user of this Standard is cautioned to observe any applicable health or safety regulations and rules relative to the manufacture and use of cable made in conformity with this Standard. This Standard hereafter assumes that only properly trained personnel using suitable equipment will manufacture, test, install, and/or perform maintenance on cables defined by this Standard.

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This Standard was approved by ICEA on TBD. The members of the ICEA Communications Cable Division, Working Group 675, who participated in this project, were:

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This Standard replaces ICEA S-91-675-2011, which was titled “Coaxial and Coaxial/Twisted Pair Composite aerial Service Wires Technical Requirements”. The title of this revision has been updated to “Coaxial and Coaxial/Twisted Pair Hybrid Buried Service Wires Technical Requirements”. The words *composite* and *hybrid* have been interchanged to reflect the information presented in the note below.

Note: ICEA Standards prior to 2012, including the previous edition of this Standard, use definitions for *composite* and *hybrid* which are the exact opposite of those shown in ICEA Standards after 2012 (inclusive). The change in definitions was made in the interest of harmonization with international documents and other national standards. It must be noted that the definition of *composite* in the National Electrical Code, 2011 and earlier, are consistent with the older ICEA definition. Due to this change, users may see the terms used interchangeably. Regarding the definition for *hybrid*, IEC uses a definition which encompasses metallic conductors used for all purposes – not just communication.

TABLE OF CONTENTS

CONTENTS:	SECTION	PAGE
1	GENERAL	
	1.1 PURPOSE	1
	1.2 SCOPE	1
	1.3 OPTIONS AND INFORMATION	2
	1.4 UNITS AND TOLERANCES	2
	1.5 REFERENCES	2
	1.6 QUALITY ASSURANCE	2
	1.7 SAFETY CONSIDERATIONS	3
2	CONDUCTORS	
	2.1 TWISTED PAIR CONDUCTORS	3
	2.1.1 Requirements	3
	2.1.2 Factory Joints	3
	2.2 CONDUCTORS OF COAXIAL UNIT	3
	2.2.1 Center Conductor of Coaxial Unit	3
	2.2.1.1 Resistance Requirements	3
	2.2.1.2 Tensile and Elongation Requirements	4
	2.2.1.3 Factory Joints	4
	2.2.2 Outer Conductor (Shield) of Coaxial Unit	4
	2.2.2.1 Shielding Tape	5
	2.2.2.2 Braid	5
	2.2.2.3 Outer Shield	6
	2.2.2.4 Outer Braid	6
3	CONDUCTOR INSULATION	
	3.1 CONDUCTOR INSULATION FOR TWISTED PAIRS	6
	3.1.1 Insulation Material	6
	3.1.2 Insulation Type	6
	3.1.3 Insulation Dimensions and Colors	6
	3.1.4 Splices	7
	3.1.5 Insulation Physical Requirements	7
	3.1.5.1 Adhesion	7
	3.1.5.2 Elongation	7
	3.1.5.3 Cold Bend	7
	3.1.5.4 Shrinkback	7
	3.1.5.5 Thermal Oxidative Stability	8
	3.1.5.6 Heat exposure (aging)	8
	3.1.6 Spark Test	8
	3.1.7 Twist Length and Color Coding	8

TABLE OF CONTENTS – (continued)

CONTENTS	SECTION	PAGE
	3.2 CONDUCTOR INSULATION FOR CENTER CONDUCTOR OF COAXIAL UNIT.....	9
	3.2.1 Insulation Material.....	9
	3.2.2 Insulation Type	9
	3.2.3 Insulation Dimension	9
	3.2.4 Insulation Physical Requirements.....	9
	3.2.4.1 Adhesion.....	9
	3.2.4.2 Thermal Oxidative Stability – OIT Test of Foam Dielectric.....	10
	3.2.4.3 Shrinkback.....	10
4	STRENGTH MEMBER / MESSENGER	
	4.1 STRENGTH MEMBER / MESSENGER OPTIONS.....	10
	4.2 STEEL REINFORCEMENT.....	10
	4.2.1 Galvanized Steel Messenger.....	10
	4.2.2 Tensile Strength.....	10
	4.2.3 Splicing	11
	4.3 SYNTHETIC REINFORCEMENT.....	11
	4.3.1 Non Metallic Strength Member	11
	4.3.2 Splicing	11
5	JACKET CONFIGURATION	
	5.1 DESIGN OPTIONS.....	11
	5.1.1 Single Coaxial Unit	11
	5.1.2 Joint Core	11
	5.1.3 Hybrid or Butterfly Design.....	11
	5.2 CORE WRAP	11
	5.3 RIP CORD	11
6	JACKET	
	6.1 JACKET MATERIAL.....	13
	6.2 JACKET THICKNESS	13
	6.3 JACKET ECCENTRICITY	13
	6.4 DIAMETER OVER COAX-JACKET.....	14
	6.5 COMPLETED WIRE JACKET REQUIREMENTS.....	14
	6.5.1 Tensile Strength.....	15
	6.5.2 Elongation.....	15
	6.5.3 Heat Exposure (Aging)	15
	6.5.4 Light Absorption.....	15

TABLE OF CONTENTS – (continued)

CONTENTS	SECTION	PAGE
7	ELECTRICAL REQUIREMENTS	
	7.1 ELECTRICAL REQUIREMENTS OF TWISTED PAIRS	15
	7.1.1 Continuity	15
	7.1.2 Conductor Resistance	15
	7.1.3 Resistance Unbalance	15
	7.1.4 Mutual Capacitance	15
	7.1.5 Pair-to-Pair Capacitance Unbalance	16
	7.1.6 Pair-to-Ground Capacitance Unbalance	16
	7.1.7 Attenuation-Dry	16
	7.1.8 Attenuation-Wet	16
	7.1.9 Crosstalk	16
	7.1.10 Insulation Resistance-Wet	16
	7.1.11 Dielectric Strength-Dry	17
	7.1.12 Fusing Coordination	17
	7.2 ELECTRICAL REQUIREMENTS OF COAXIAL UNIT	17
	7.2.1 Continuity	17
	7.2.2 Conductor Resistance	17
	7.2.3 Insulation Resistance	17
	7.2.4 Dielectric Strength	17
	7.2.5 Characteristic Impedance	17
	7.2.6 Structural Return Loss	18
	7.2.7 Shielding Effectiveness	18
	7.2.8 Attenuation	18
	7.2.9 Velocity of Propagation	18
	7.2.10 Heat Aging Test	18
8	MECHANICAL REQUIREMENTS	
	8.1 IMPACT TEST-UNAGED	19
	8.2 IMPACT TEST-AGED	20
	8.3 STATIC LOAD TEST	20
	8.4 PLASTICIZER COMPATIBILITY	20
	8.5 COMPATIBILITY OF JACKET AND FIBER ADHESIVE (NMR)	20
	8.6 ABRASION RESISTANCE	20
	8.7 COLD TEMPERATURE HANDLING-UNAGED	21
	8.8 COLD TEMPERATURE HANDLING-AGED	21
	8.9 WEB SEPARATION	22
	8.9.1 Room Temperature Separation	22
	8.9.2 Low Temperature Separation	22
	8.10 NATIONAL ELECTRICAL CODE	22

TABLE OF CONTENTS– (continued)

CONTENTS	SECTION	PAGE
9	MARKING AND PACKAGING	
	9.1 JACKET MARKING	22
	9.2 LENGTH MARKING	23
	9.3 JACKET INK MARKING DURABILITY	23
	9.4 END-SEALING	23
	9.5 PACKAGING	23

TABLES

Table 2-1 Conductivity and DC Resistance of Center Conductor – Coaxial Unit	4
Table 2-2 Elongation and Tensile Strength of Center Conductor – Coaxial Unit	4
Table 2-3 Diameter of Outer Conductor – Coaxial Unit	5
Table 3-1 Conductor Insulation Color – Twisted Pairs	7
Table 3-2 Twisted Pair Color Code	8
Table 3-3 Diameter and Eccentricity of Center Conductor Insulation – Coaxial Unit	9
Table 3-4 Center Conductor Insulation Adhesion – Coaxial Unit	9
Table 4-1 Diameter – Galvanized Steel Messengers	10
Table 6-1 Diameter Over Jacket – Coaxial Unit	14
Table 7-1 Loop Resistance – Coaxial Unit	17
Table 7-2 Attenuation Requirements – Coaxial Unit	19
Table I Specifications Referenced in this Standard	24
Table D-1 Test Current and Current Duration – Fusing Coordination Test	33

FIGURES

Figure 5-1: - Hybrid Hybrid and Butterfly Designs	12
Figure 5-2: - Figure 8 Design	12
Figure 6-1 – Jacket Thickness Measurement Method Standard and Quad Shielded Coaxial Wires	14
Figure A-1 – Wicking Test Configuration	28
Figure D-1 – Fusing Coordination Test Configuration	33

TABLE OF CONTENTS– (continued)

CONTENTS	SECTION	PAGE
----------	---------	------

APPENDICES

Appendix A	Test Procedure For Wicking and Hygroscopicity	27
Appendix B	Jacket Rip Cord Test	29
Appendix C	Solution Method to Determine “Apparent” Absorption Coefficient for PVC Materials.....	30
Appendix D	Fusing Coordination Test.....	32

INFORMATIVE ANNEXES

Informative Annex A	Product Guide	A-1
Informative Annex B:	ICEA Telecommunications Cable Standards.....	B-1

ACRONYMS, ABBREVIATIONS AND SYMBOLS

A	apparent absorption coefficient
AC	alternating current
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
AWG	American Wire Gauge
°C	degrees of temperature, Celsius scale
CAS	Chemical Abstract Services
dB	decibels
DC	direct current
EIA	Electronics Industry Alliance
°F	degrees of temperature, Fahrenheit scale
ft	foot or feet
g	gram(s)
Hz	Hertz
ICEA	Insulated Cable Engineers Association
in	inch(s)
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
kft	kilofoot or kilofeet
kg	kilogram
kHz	kilohertz
km	kilometer
kPa	kilopascal
LAN	Local Area Network
lbf	pound of force
m	meter
Mb	megabits
mg	milligram
MHz	megahertz
Mi	mile
min.	minimum
ml	milliliter
mm	millimeter
mm ²	square millimeter
MPa	megapascal
N	Newton
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
nF	nanofarad
NID	Network Interface Device
NIU	Network Interface Unit
%	percent
pF	picofarad
POTS	Plain Old Telephone Service
psi	pounds per square inch
PVC	polyvinyl chloride
RF	radio frequency
rms	root-mean-square

ACRONYMS, ABBREVIATIONS AND SYMBOLS - continued

SCTE	Society of Cable Telecommunication Engineers
sec	second
T1	North American Digital Hierarchy Line Code – Equivalent to 1.544 Mb/sec
UL	Underwriters Laboratories
V	volt
WAN	Wide Area Network
~	approximation symbol
°	degrees symbol, temperature or angle
"	inches or inch symbol

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COAXIAL AND COAXIAL/TWISTED PAIR HYBRID AERIAL SERVICE WIRES TECHNICAL REQUIREMENTS

SECTION 1 GENERAL

- 1.1 **PURPOSE:** The purpose of this Standard is to establish generic technical requirements that may be referenced by individual telecommunications wire specifications covering products intended for the aerial outside plant use. The parameters covered provide material, construction, and performance requirements.

Because this Standard does not cover all details of individual wire designs, it cannot be used as a single document for procurement of product. This Standard is intended to be used in conjunction with an individual product specification that provides complete design details for the specific wire type and designates the applicable performance requirements. Such individual wire specifications may be prepared either by the user or the manufacturer. The specification designated for procurement is at the option of the user.

- 1.2 **SCOPE:** This Standard covers mechanical and electrical requirements of service wires containing at least one coaxial core and optionally up to six twisted pairs, used for service applications to extend the telephone/multimedia circuit from the distribution terminal to the subscriber's station protected NID (Network Interface Device) or protected NIU (Network Interface Unit).

Furthermore, a distinction between **Type I** and **Type II** is made with regard to transmission characteristics and shielding materials of the coaxial unit.

Aerial Service Wire is intended to be self supporting and shall contain strength members to accommodate the appropriate requirements of this Standard. The self supporting properties may be accomplished by utilizing a zinc coated steel strength member or synthetic fibers as strength members embedded in a suitably shaped jacket.

The coaxial unit is intended to be used for either RF or compressed digital video and radio transmissions. This unit shall also allow bi-directional traffic. The coaxial unit should also be capable of carrying high speed digital signals for LAN/WAN applications (such as T1, ISDN, etc.) as well as POTS (Plain Old Telephone Services). The network supporting these protocols will be based upon physical lines having a characteristic impedance of 75 Ω . The coaxial units are specified in three and four common sizes for **Type I** and **Type II** respectively, to accommodate different drop lengths.

The twisted pair wires are intended for voice and data transmission and their characteristics are based upon existing system requirements and projected application needs.