

# Table of Contents

<b>Preface</b> . . . . .	xix
<b>1 Introduction</b>	
1.1 Purpose and Scope . . . . .	1-1
1.2 Target Audience . . . . .	1-1
1.3 Structure and Use of This Document . . . . .	1-2
1.4 Requirements Terminology . . . . .	1-2
1.5 Requirement Labeling Conventions . . . . .	1-3
1.5.1 Numbering of Requirement and Related Objects . . . . .	1-3
1.5.2 Requirement, Conditional Requirement, and Objective Identification . . . . .	1-4
1.6 References . . . . .	1-4
1.7 Reasons for this Reissue . . . . .	1-5
<b>2 General Information</b>	
2.1 General Product Description . . . . .	2-1
2.1.1 Characteristics of Optical Fiber . . . . .	2-1
2.1.2 Characteristics of Fiber Optic Units . . . . .	2-3
2.1.2.1 Characteristics of Fiber Optic Bundles . . . . .	2-3
2.1.2.2 Characteristics of Fiber Ribbons . . . . .	2-3
2.1.2.3 Characteristics of Fiber Optic Loose Buffer Tubes . . . . .	2-4
2.1.3 Characteristics of Optical Cable . . . . .	2-4
2.1.4 Classification of Optical Cables . . . . .	2-6
2.1.5 Safety . . . . .	2-6
2.2 Engineering of Optical Fiber Systems . . . . .	2-7
2.3 Upgrading to Meet Future Capacity Requirements . . . . .	2-7
2.4 Optical Fiber Compatibility . . . . .	2-7
2.5 General OSP Cable Considerations . . . . .	2-7
2.5.1 General Considerations . . . . .	2-7
2.5.2 Aerial applications . . . . .	2-8
2.5.3 Duct applications . . . . .	2-8
2.5.4 Cable Blowing or Jetting in Duct Applications . . . . .	2-8
2.5.5 Splicing/Termination . . . . .	2-8
2.5.6 Reel Handling . . . . .	2-9
<b>3 Product Manufacturer's Qualification Requirements</b>	
3.1 Optical Fiber Product Qualification . . . . .	3-2
3.1.1 Requirements . . . . .	3-2
3.2 Fiber Ribbon Product Qualification . . . . .	3-4
3.2.1 Requirements . . . . .	3-4
3.3 Optical Fiber Cable Product Qualification . . . . .	3-5
3.3.1 Requirements . . . . .	3-6
3.3.2 Independent Testing Laboratory (ITL) Testing of Optical Cable . . . . .	3-10
3.4 Normal Test Conditions . . . . .	3-10
3.4.1 Expanded Ambient Exception . . . . .	3-11

## 4 Requirements for Single-Mode and Multimode Optical Fibers

4.1 Single-Mode Fiber Requirements: General Information . . . . .	4-1
4.1.1 New Fiber Types . . . . .	4-4
4.2 Single-Mode Fiber: Materials . . . . .	4-4
4.2.1 Requirements . . . . .	4-4
4.2.2 Sample Size . . . . .	4-4
4.2.3 Test Procedure . . . . .	4-4
4.3 Single-Mode Fiber: Optical Requirements . . . . .	4-5
4.3.1 Attenuation Coefficient . . . . .	4-5
4.3.1.1 Requirement . . . . .	4-5
4.3.1.2 Sample Size . . . . .	4-6
4.3.1.3 Test Procedure . . . . .	4-6
4.3.1.4 Discussion . . . . .	4-6
4.3.2 Point Discontinuities . . . . .	4-7
4.3.2.1 Requirement . . . . .	4-7
4.3.2.2 Sample Size . . . . .	4-7
4.3.2.3 Test Procedure . . . . .	4-7
4.3.3 Chromatic Dispersion . . . . .	4-8
4.3.3.1 Requirements . . . . .	4-8
4.3.3.2 Sample Size . . . . .	4-10
4.3.3.3 Test Procedure . . . . .	4-10
4.3.3.4 Discussion . . . . .	4-10
4.3.4 Cabled Single-Mode Fiber Cutoff Wavelength . . . . .	4-10
4.3.4.1 Requirements . . . . .	4-10
4.3.4.2 Sample Size . . . . .	4-11
4.3.4.3 Test Procedure . . . . .	4-11
4.3.4.4 Discussion . . . . .	4-12
4.3.5 Mode Field Diameter . . . . .	4-12
4.3.5.1 Requirements . . . . .	4-12
4.3.5.2 Sample Size . . . . .	4-13
4.3.5.3 Test Procedure . . . . .	4-13
4.3.6 Macrobending . . . . .	4-13
4.3.6.1 Requirements . . . . .	4-13
4.3.6.2 Sample Size . . . . .	4-14
4.3.6.3 Test Procedure . . . . .	4-14
4.3.6.4 Discussion . . . . .	4-14
4.3.7 Polarization Mode Dispersion (PMD) . . . . .	4-15
4.3.7.1 Requirement . . . . .	4-15
4.3.7.2 Sample Size . . . . .	4-15
4.3.7.3 Test Procedures . . . . .	4-15
4.3.7.4 Discussion . . . . .	4-15
4.4 Single-Mode Fiber: Geometrical Requirements . . . . .	4-15
4.4.1 Requirements . . . . .	4-15
4.4.2 Sample Size . . . . .	4-16
4.4.3 Test Procedures . . . . .	4-16
4.5 Single-Mode and Multimode Fiber: Mechanical Requirements . . . . .	4-17
4.5.1 Tensile Proof Strength . . . . .	4-17
4.5.1.1 Requirements . . . . .	4-17
4.5.1.2 Sample Size . . . . .	4-17
4.5.1.3 Test Procedure . . . . .	4-17

4.5.1.4 Discussion . . . . .	4-17
4.5.2 Fiber Coating Strip Force . . . . .	4-18
4.5.2.1 Requirements . . . . .	4-18
4.5.2.2 Sample Size . . . . .	4-18
4.5.2.3 Test Procedure . . . . .	4-19
4.5.3 Fiber Dynamic Tensile Strength . . . . .	4-20
4.5.3.1 Requirements . . . . .	4-20
4.5.3.2 Sample Size . . . . .	4-21
4.5.3.3 Test Procedure . . . . .	4-21
4.5.4 Fiber Stress Corrosion Parameter . . . . .	4-21
4.5.4.1 Requirements . . . . .	4-21
4.5.4.2 Sample Size . . . . .	4-21
4.5.4.3 Test Procedure . . . . .	4-22
4.6 Single-Mode Fiber Splicing . . . . .	4-22
4.6.1 Single-Mode Fiber Cleavability . . . . .	4-22
4.6.1.1 Requirements . . . . .	4-22
4.6.2 Single-Mode Fiber Fusibility . . . . .	4-23
4.6.2.1 Requirements . . . . .	4-23
4.6.2.2 Discussion . . . . .	4-23
4.6.2.3 Sample Size . . . . .	4-23
4.6.2.4 Test Procedure . . . . .	4-23
4.7 Multimode Fiber Requirements: General Information . . . . .	4-24
4.8 Multimode Fiber: Materials . . . . .	4-25
4.8.1 Requirements . . . . .	4-25
4.9 Multimode Fiber: Optical Requirements . . . . .	4-25
4.9.1 Attenuation Coefficient . . . . .	4-25
4.9.1.1 Requirements . . . . .	4-25
4.9.1.2 Sample Size . . . . .	4-26
4.9.1.3 Test Procedure . . . . .	4-26
4.9.1.4 Discussion . . . . .	4-26
4.9.2 Point Discontinuities . . . . .	4-27
4.9.2.1 Requirements . . . . .	4-27
4.9.2.2 Sample Size . . . . .	4-27
4.9.2.3 Test Procedure . . . . .	4-27
4.9.3 Bandwidth . . . . .	4-27
4.9.3.1 Requirements . . . . .	4-27
4.9.3.2 Sample Size . . . . .	4-28
4.9.3.3 Test Procedure . . . . .	4-29
4.9.4 Macrobending Loss . . . . .	4-29
4.9.4.1 Requirements . . . . .	4-29
4.9.4.2 Sample Size . . . . .	4-30
4.9.4.3 Test Procedure . . . . .	4-30
4.10 Multimode Fiber: Geometrical Requirements . . . . .	4-30
4.10.1 Requirements . . . . .	4-30
4.10.2 Sample Size . . . . .	4-32
4.10.3 Test Procedure . . . . .	4-32
4.11 Multimode Fiber: Mechanical Requirements . . . . .	4-33
4.12 Multimode Fiber: Fusibility . . . . .	4-33

## 5 Requirements for Optical Fiber Ribbons

5.1	Optical Fiber Ribbons: General Information . . . . .	5-1
5.2	Geometrical Requirements (Traditional and Unitized) . . . . .	5-2
5.2.1	Ribbon Structure (Both Types of Ribbon) . . . . .	5-2
5.2.1.1	Requirements . . . . .	5-2
5.2.1.2	Sample Size . . . . .	5-3
5.2.1.3	Test Procedure . . . . .	5-3
5.2.2	Ribbon Dimensions (Both Types of Ribbon) . . . . .	5-3
5.2.2.1	Requirements . . . . .	5-3
5.2.2.2	Sample Size . . . . .	5-4
5.2.2.3	Test Procedure . . . . .	5-4
5.3	Mechanical Requirements . . . . .	5-5
5.3.1	Ribbon Separation - Traditional Ribbon . . . . .	5-5
5.3.1.1	Requirements . . . . .	5-5
5.3.1.2	Sample Size . . . . .	5-5
5.3.1.3	Test Procedure . . . . .	5-5
5.3.2	Ribbon Separation - Unitized Ribbon . . . . .	5-6
5.3.2.1	Requirements . . . . .	5-6
5.3.2.2	Sample Size . . . . .	5-7
5.3.2.3	Test Procedure . . . . .	5-7
5.3.3	Ribbon Strippability (Both Types of Ribbon) . . . . .	5-8
5.3.3.1	Requirement . . . . .	5-8
5.3.3.2	Sample Size . . . . .	5-8
5.3.3.3	Test Procedure . . . . .	5-8
5.3.4	Ribbon Residual Twist - Flatness (Both Types of Ribbon) . . . . .	5-9
5.3.4.1	Requirement . . . . .	5-9
5.3.4.2	Sample Size . . . . .	5-9
5.3.4.3	Test Procedure . . . . .	5-10
5.3.5	Ribbon Twist Robustness (Both Types of Ribbon) . . . . .	5-10
5.3.5.1	Requirements . . . . .	5-10
5.3.5.2	Sample Size . . . . .	5-10
5.3.5.3	Test Procedure . . . . .	5-10
5.4	Fiber Ribbon Splicing . . . . .	5-11
5.4.1	Single-Mode Ribbon Fiber Cleavability . . . . .	5-11
5.4.1.1	Requirements . . . . .	5-11
5.4.1.2	Sample Size . . . . .	5-11
5.4.1.3	Test Procedure . . . . .	5-11
5.4.2	Single-Mode Ribbonized Fiber Fusibility . . . . .	5-11
5.4.2.1	Requirement . . . . .	5-11
5.4.2.2	Sample Size . . . . .	5-12
5.4.2.3	Test Procedure . . . . .	5-12

## 6 Requirements for Optical Cables

6.1	Cable Construction . . . . .	6-2
6.1.1	Continuity of Metallic Members . . . . .	6-2
6.1.1.1	Requirement . . . . .	6-2
6.1.1.2	Sample Size . . . . .	6-2
6.1.1.3	Test Procedure . . . . .	6-3
6.1.2	Cable Core . . . . .	6-3

6.1.2.1 Requirement . . . . .	6-3
6.1.2.2 Sample Size . . . . .	6-3
6.1.2.3 Test Procedure . . . . .	6-3
6.1.3 Anti-Buckling and Strength Elements Splicing . . . . .	6-3
6.1.3.1 Requirement . . . . .	6-3
6.1.3.2 Sample Size . . . . .	6-3
6.1.3.3 Test Procedure . . . . .	6-4
6.1.4 Rated Pulling Tension . . . . .	6-4
6.1.4.1 Requirements . . . . .	6-4
6.1.4.2 Sample Size . . . . .	6-4
6.1.4.3 Test Procedure . . . . .	6-4
6.1.5 Spare Fibers in Cable . . . . .	6-5
6.1.5.1 Requirement . . . . .	6-5
6.1.5.2 Sample Size . . . . .	6-5
6.1.5.3 Test Procedure . . . . .	6-5
6.1.6 Number of Fibers Per Unit/Binder . . . . .	6-5
6.1.6.1 Requirements . . . . .	6-5
6.1.6.2 Sample Size . . . . .	6-5
6.1.6.3 Test Procedure . . . . .	6-5
6.1.7 Unit Stranding . . . . .	6-6
6.1.7.1 Requirement . . . . .	6-6
6.1.7.2 Sample Size . . . . .	6-6
6.1.7.3 Test Procedure . . . . .	6-6
6.1.8 Spliced and Defective Fibers . . . . .	6-6
6.1.8.1 Requirements . . . . .	6-6
6.1.8.2 Sample Size . . . . .	6-6
6.1.8.3 Test Procedure . . . . .	6-7
6.1.9 Ripcords . . . . .	6-7
6.1.9.1 Requirements . . . . .	6-7
6.1.9.2 Sample Size . . . . .	6-7
6.1.9.3 Test Procedure . . . . .	6-7
6.1.9.4 Additional Discussion . . . . .	6-8
6.2 Cable Marking, Packaging, and Shipping . . . . .	6-8
6.2.1 Cable Marking . . . . .	6-8
6.2.1.1 Requirements . . . . .	6-8
6.2.1.2 Sample Size . . . . .	6-8
6.2.1.3 Test Procedure . . . . .	6-8
6.2.2 Cable Re-Marking . . . . .	6-9
6.2.2.1 Requirement . . . . .	6-9
6.2.2.2 Sample Size . . . . .	6-9
6.2.2.3 Test Procedure . . . . .	6-9
6.2.3 Identification Marking . . . . .	6-9
6.2.3.1 Requirements . . . . .	6-9
6.2.3.2 Sample Size . . . . .	6-9
6.2.3.3 Test Procedure . . . . .	6-10
6.2.4 Cable Length and Length Markings . . . . .	6-10
6.2.4.1 Requirements . . . . .	6-10
6.2.4.2 Sample Size . . . . .	6-10
6.2.4.3 Test Procedure . . . . .	6-10
6.2.5 Fiber and Unit Identification . . . . .	6-11

6.2.5.1	Requirements . . . . .	6-11
6.2.5.2	Sample Size . . . . .	6-12
6.2.5.3	Test Procedure . . . . .	6-12
6.2.6	Packaging . . . . .	6-13
6.2.6.1	Requirements . . . . .	6-13
6.2.6.2	Sample Size . . . . .	6-14
6.2.6.3	Test Procedure . . . . .	6-14
6.2.7	Shipping . . . . .	6-14
6.2.7.1	Requirement . . . . .	6-14
6.2.7.2	Sample Size . . . . .	6-15
6.2.7.3	Test Procedure . . . . .	6-15
6.2.8	Cable Reel . . . . .	6-15
6.2.8.1	Requirements . . . . .	6-15
6.2.8.2	Sample Size . . . . .	6-15
6.2.8.3	Test Procedure . . . . .	6-15
6.3	Cable Materials . . . . .	6-16
6.3.1	Water-Blocking Materials . . . . .	6-16
6.3.1.1	Requirements . . . . .	6-16
6.3.1.2	Sample Size . . . . .	6-17
6.3.1.3	Test Procedure . . . . .	6-17
6.3.2	Water-Blocking Material Flow . . . . .	6-17
6.3.2.1	Requirement . . . . .	6-17
6.3.2.2	Sample Size . . . . .	6-18
6.3.2.3	Test Procedure . . . . .	6-18
6.3.3	Cable Material Compatibility . . . . .	6-18
6.3.3.1	Requirements . . . . .	6-18
6.3.3.2	Sample Size . . . . .	6-19
6.3.3.3	Test Procedure . . . . .	6-19
6.4	Jacket Requirements . . . . .	6-20
6.4.1	Jacket Material . . . . .	6-20
6.4.1.1	Requirements . . . . .	6-20
6.4.1.2	Sample Size . . . . .	6-20
6.4.1.3	Test Procedure . . . . .	6-20
6.4.2	Cable Outer Diameter and Jacket Thickness . . . . .	6-21
6.4.2.1	Requirements . . . . .	6-21
6.4.2.2	Sample Size . . . . .	6-21
6.4.2.3	Test Procedure . . . . .	6-21
6.4.3	Cable Jacket Yield Strength and Ultimate Elongation . . . . .	6-22
6.4.3.1	Requirement . . . . .	6-22
6.4.3.2	Sample Size . . . . .	6-23
6.4.3.3	Test Procedure . . . . .	6-23
6.4.4	Cable Jacket Adherence . . . . .	6-23
6.4.4.1	Requirement . . . . .	6-23
6.4.5	Fungus Resistance of Cable Jacket . . . . .	6-23
6.4.5.1	Requirement . . . . .	6-23
6.4.5.2	Test Procedure . . . . .	6-23
6.4.6	Rodent Resistance . . . . .	6-24
6.5	Mechanical Requirements . . . . .	6-24
6.5.1	Optical Measurement Equipment . . . . .	6-24
6.5.1.1	Requirements . . . . .	6-24

6.5.1.2	Sample Size . . . . .	6-24
6.5.1.3	Test Procedure . . . . .	6-24
6.5.2	Cable Testing . . . . .	6-25
6.5.2.1	Requirement . . . . .	6-25
6.5.2.2	Sample Size . . . . .	6-25
6.5.2.3	Test Procedure - Measurement . . . . .	6-25
6.5.3	Low- and High-Temperature Cable Bend . . . . .	6-26
6.5.3.1	Requirement . . . . .	6-26
6.5.3.2	Sample Size . . . . .	6-26
6.5.3.3	Test Procedure . . . . .	6-26
6.5.3.4	Optical Acceptance Criteria . . . . .	6-26
6.5.4	Impact Resistance . . . . .	6-26
6.5.4.1	Requirement . . . . .	6-26
6.5.4.2	Sample Size . . . . .	6-27
6.5.4.3	Test Procedure . . . . .	6-27
6.5.4.4	Optical Acceptance Criteria . . . . .	6-27
6.5.5	Compressive Strength . . . . .	6-27
6.5.5.1	Requirements . . . . .	6-27
6.5.5.2	Sample Size . . . . .	6-27
6.5.5.3	Test Procedure . . . . .	6-28
6.5.5.4	Optical Acceptance Criteria . . . . .	6-28
6.5.6	Tensile Strength of Cable . . . . .	6-28
6.5.6.1	Requirements . . . . .	6-28
6.5.6.2	Sample Size . . . . .	6-28
6.5.6.3	Test Procedure . . . . .	6-28
6.5.6.4	Optical Acceptance Criteria . . . . .	6-29
6.5.7	Cable Twist . . . . .	6-29
6.5.7.1	Requirement . . . . .	6-29
6.5.7.2	Sample Size . . . . .	6-29
6.5.7.3	Test Procedure . . . . .	6-29
6.5.7.4	Optical Acceptance Criteria . . . . .	6-29
6.5.8	Cable Cyclic Flexing . . . . .	6-30
6.5.8.1	Requirement . . . . .	6-30
6.5.8.2	Sample Size . . . . .	6-30
6.5.8.3	Test Procedure . . . . .	6-30
6.5.8.4	Optical Acceptance Criteria . . . . .	6-30
6.5.9	Cable Termination . . . . .	6-30
6.5.9.1	Requirement . . . . .	6-30
6.5.9.2	Sample Size . . . . .	6-30
6.5.9.3	Test Procedure . . . . .	6-31
6.5.9.4	Optical Acceptance Criteria . . . . .	6-31
6.5.10	Cable/Fiber (or Ribbon) Coupling . . . . .	6-31
6.5.10.1	Requirements . . . . .	6-31
6.5.10.2	Sample Size . . . . .	6-32
6.5.10.3	Test Procedure . . . . .	6-32
6.5.10.4	Optical Acceptance Criteria . . . . .	6-32
6.5.11	Mid-Span Buffer Tube Performance of Stranded Cable . . . . .	6-32
6.5.11.1	Requirement . . . . .	6-32
6.5.11.2	Informative Description of Requirement . . . . .	6-32
6.5.11.3	Sample Size . . . . .	6-33

6.5.11.4 Test Procedure . . . . .	6-33
6.5.11.5 Optical Acceptance Criteria . . . . .	6-33
6.5.12 Buffer Tube Kink Test . . . . .	6-33
6.5.12.1 Requirement . . . . .	6-33
6.5.12.2 Sample Size . . . . .	6-33
6.5.12.3 Test Procedure . . . . .	6-33
6.6 Environmental Requirements . . . . .	6-34
6.6.1 Optical Measurement Equipment . . . . .	6-34
6.6.1.1 Requirements . . . . .	6-34
6.6.1.2 Sample Size . . . . .	6-34
6.6.1.3 Test Procedure . . . . .	6-34
6.6.2 In-Service Cable Performance - Environmental Testing . . . . .	6-34
6.6.3 Temperature Cycling . . . . .	6-35
6.6.3.1 Requirement . . . . .	6-35
6.6.3.2 Sample Size . . . . .	6-35
6.6.3.3 Test Procedure . . . . .	6-35
6.6.3.4 Optical Acceptance Criteria . . . . .	6-36
6.6.4 Cable Aging . . . . .	6-36
6.6.4.1 Requirement . . . . .	6-36
6.6.4.2 Sample Size . . . . .	6-36
6.6.4.3 Test Procedure . . . . .	6-36
6.6.4.4 Optical Acceptance Criteria . . . . .	6-37
6.6.5 Cable Freezing . . . . .	6-37
6.6.5.1 Requirements . . . . .	6-37
6.6.5.2 Sample Size . . . . .	6-37
6.6.5.3 Test Procedure . . . . .	6-38
6.6.5.4 Optical Acceptance Criteria . . . . .	6-38
6.6.5.5 Alternate Test Procedure for Industry Study and Comment . . . . .	6-39
6.6.6 Color Permanence and Marking Durability . . . . .	6-39
6.6.6.1 Requirements . . . . .	6-39
6.6.6.2 Sample Size . . . . .	6-40
6.6.6.3 Test Procedure . . . . .	6-40
6.6.7 Water Penetration . . . . .	6-40
6.6.7.1 Requirements . . . . .	6-40
6.6.7.2 Sample Size . . . . .	6-41
6.6.7.3 Test Procedure . . . . .	6-41
6.6.7.4 Optical Acceptance Criteria . . . . .	6-42
6.6.8 Wasp Spray Exposure . . . . .	6-42
6.6.8.1 Requirements . . . . .	6-42
6.6.8.2 Sample Size . . . . .	6-43
6.6.8.3 Test Procedure . . . . .	6-43
6.6.9 Hydrogen in Cables . . . . .	6-45
6.6.9.1 Requirement . . . . .	6-45
6.6.9.2 Sample Size . . . . .	6-45
6.6.9.3 Test Procedure . . . . .	6-45
6.7 Electrical Protection Requirements . . . . .	6-45
6.7.1 Lightning Damage Susceptibility . . . . .	6-46
6.7.1.1 Requirement . . . . .	6-46
6.7.1.2 Sample Size . . . . .	6-46
6.7.1.3 Test Procedure . . . . .	6-46



6.7.2	Current-Carrying Capability of Metallic Members . . . . .	6-47
6.7.2.1	Requirement . . . . .	6-47
6.7.2.2	Sample Size . . . . .	6-47
6.7.2.3	Test Procedure . . . . .	6-47
6.8	Optical Performance Requirements of Cable . . . . .	6-48
6.8.1	Attenuation Coefficient . . . . .	6-48
6.8.1.1	Requirement . . . . .	6-48
6.8.1.2	Sample Size . . . . .	6-48
6.8.1.3	Test Procedure . . . . .	6-48
6.8.1.4	Optical Acceptance Criteria . . . . .	6-48
6.8.2	Multimode Optical Bandwidth . . . . .	6-49
6.8.2.1	Requirement . . . . .	6-49
6.8.2.2	Sample Size . . . . .	6-49
6.8.2.3	Test Procedure . . . . .	6-49
6.8.2.4	Optical Acceptance Criteria . . . . .	6-49
6.8.3	Point Discontinuities . . . . .	6-50
6.8.3.1	Requirement . . . . .	6-50
6.8.3.2	Sample Size . . . . .	6-50
6.8.3.3	Test Procedure . . . . .	6-50
6.8.4	1625-nm Cabled Performance Requirements . . . . .	6-51
6.8.4.1	Requirement . . . . .	6-51
6.8.4.2	Sample Size . . . . .	6-51
6.8.4.3	Test Procedure . . . . .	6-51
6.8.4.4	Optical Acceptance Criteria . . . . .	6-52
6.8.5	Polarization Mode Dispersion (PMD) . . . . .	6-52
6.8.5.1	Requirement . . . . .	6-52
6.8.5.2	Sample Size . . . . .	6-52
6.8.5.3	Test Procedures . . . . .	6-52
6.9	Additional Fiber Optic Cable Type Criteria . . . . .	6-52
6.9.1	Self-Supporting Aerial Cable (Figure-8) . . . . .	6-53
6.9.1.1	Requirements . . . . .	6-53
6.9.1.2	Sample Size . . . . .	6-54
6.9.1.3	Test Procedure . . . . .	6-54
6.9.2	Optical Fiber Drop Cable . . . . .	6-54
6.9.2.1	Requirement . . . . .	6-54
6.9.2.2	Sample Size . . . . .	6-54
6.9.2.3	Test Procedure . . . . .	6-55
6.9.3	Indoor-Outdoor Optical Fiber Cable . . . . .	6-57
6.9.3.1	Requirement . . . . .	6-58
6.9.3.2	Sample Size . . . . .	6-58
6.9.3.3	Test Procedure . . . . .	6-58
6.9.4	All-Dielectric Self-Supporting (ADSS) Fiber Optic Cable . . . . .	6-61
6.9.4.1	Requirement . . . . .	6-61
6.9.4.2	Sample Size . . . . .	6-61
6.9.4.3	Test Procedure . . . . .	6-61
6.9.5	Micro-Duct Cable . . . . .	6-62
6.9.5.1	Requirement . . . . .	6-62
6.9.5.2	Sample Size . . . . .	6-62
6.9.5.3	Test Procedure . . . . .	6-63
6.9.6	Blown Fiber Units . . . . .	6-63

6.9.6.1 Requirement . . . . .	6-63
6.9.6.2 Sample Size . . . . .	6-64
6.9.6.3 Test Procedure . . . . .	6-64
6.9.7 Multi-Dwelling Unit (MDU) Cable . . . . .	6-64
6.9.8 500 and 900 Micron Cable . . . . .	6-64

## Appendix A: References

A.1 Telcordia References . . . . .	A-1
A.2 External References . . . . .	A-1
A.3 To Obtain Additional Reference Material . . . . .	A-6
A.4 Telcordia Reference Notes . . . . .	A-7
A.4.1 Contact Telcordia Customer Service . . . . .	A-7
A.4.2 Order Documents Online From the Telcordia Information SuperStore . . . . .	A-7
A.4.3 Web Sites for Generic Requirements Information . . . . .	A-8
A.4.4 Licensing Agreements for Telcordia Documents . . . . .	A-8

## Appendix B: Acronyms

### Index

### Requirement-Object Index (ROI)

## List of Figures

Figure 2-1	Cross Section: Generic Ribbon Cable . . . . .	2-5
Figure 2-2	Cross Section: Generic Loose Tube Cable . . . . .	2-5
Figure 2-3	Cross Section: Generic Fiber Bundle Cable . . . . .	2-6
Figure 5-1	Ribbon Dimension Parameters . . . . .	5-4
Figure 6-1	Wasp Spray Exposure Test Configuration . . . . .	6-44

## List of Tables

Table 3-1	Qualification Programs for Optical Fiber . . . . .	3-3
Table 3-2	Qualification for Fiber Ribbons . . . . .	3-4
Table 3-3	Qualification Programs for Optical Fiber Cables . . . . .	3-8
Table 4-1	ITU-T, TIA, and IEC Designations for Single-Mode Fibers . . . . .	4-2
Table 4-2	Single-Mode Fiber Characteristic Test Methods . . . . .	4-2
Table 4-3	Attenuation Coefficient Criteria . . . . .	4-5
Table 4-4	Wavelength for Which Attenuation Coefficient May Be Specified . .	4-6
Table 4-5	Cabled Single-Mode Fiber Attenuation Coefficient Criteria - Informative . . . . .	4-7
Table 4-6	Single-Mode Fiber Chromatic Dispersion Criteria . . . . .	4-8
Table 4-7	Single-Mode Fiber Chromatic Dispersion Criteria - Informative . .	4-9
Table 4-8	Cabled Single-Mode Fiber Cutoff Wavelength Criteria . . . . .	4-11
Table 4-9	Single-Mode Fiber Mode Field Diameter (MFD) Criteria . . . . .	4-12
Table 4-10	Single-Mode Fiber Macrobending Criteria . . . . .	4-13
Table 4-11	Single-Mode Fiber Macrobending Criteria - Informative . . . . .	4-14
Table 4-12	Single-Mode Fiber Geometry Criteria . . . . .	4-16
Table 4-13	Summary of Fiber Strip Force Requirements - Informative . . . .	4-18
Table 4-14	Sample Conditioning for Fiber Strip Testing . . . . .	4-19
Table 4-15	Dynamic Tensile Strength GPa (kpsi) for Unaged and Aged Fiber	4-20
Table 4-16	Map of Various Multimode Fiber Standards . . . . .	4-24
Table 4-17	Multimode Fiber Characteristic Test Methods . . . . .	4-25
Table 4-18	Wavelengths for Which Multimode Fiber Attenuation Coefficients May Be Specified . . . . .	4-26
Table 4-19	Cabled Multimode Fiber Attenuation Coefficients Criteria - Informative . . . . .	4-26
Table 4-20	Minimum Multimode Fiber Bandwidth Requirements . . . . .	4-28
Table 4-21	Minimum Multimode Fiber Bandwidth Requirements - Informative	4-28
Table 4-22	Multimode Fiber Macrobending Loss Requirements . . . . .	4-29
Table 4-23	Multimode Fiber Macrobending Loss Requirements - Informative	4-30
Table 4-24	Multimode Fiber Geometry Requirements . . . . .	4-31
Table 4-25	Multimode Fiber Geometry Requirements - Informative . . . . .	4-32
Table 4-26	Multimode Fiber Coating Diameter Measurement Requirements .	4-32
Table 5-1	Maximum Ribbon Dimensions . . . . .	5-3
Table 5-2	Aging Conditions and Conditioning Environment . . . . .	5-9
Table 5-3	Ribbon Residual Twist Aging Conditions . . . . .	5-10
Table 5-4	Ribbon Twist Robustness Aging Conditions (per FOTP-141) . . .	5-11
Table 6-1	Fiber and Unit Identification . . . . .	6-12
Table 6-2	Jacket Thickness Requirements - Informative . . . . .	6-21
Table 6-3	Requirements for Jackets Removed from Completed Cable - Informative . . . . .	6-22
Table 6-4	Optical Acceptance Criteria . . . . .	6-25
Table 6-5	Cable Termination Optical Acceptance Criteria . . . . .	6-31
Table 6-6	Temperature Ranges . . . . .	6-35
Table 6-7	Temperature Cycling Optical Acceptance Criteria . . . . .	6-36
Table 6-8	Cable Aging Optical Acceptance Criteria . . . . .	6-37
Table 6-9	Tensile Strength GPa (kpsi) for Unaged Fiber . . . . .	6-43
Table 6-10	Mandrel Sizes for Chemical Exposure Test . . . . .	6-44

Table 6-11	Attenuation Coefficient Performance Requirements (dB/km) . . .	6-48
Table 6-12	Multimode Bandwidth Coefficient Performance Requirements - Informative . . . . .	6-49
Table 6-13	Point Discontinuities Acceptance Criteria (dB) - Informative . . .	6-50
Table 6-14	Cable Acceptance Criteria for L-Band Operation (ICEA 640, Annex E) - Informative . . . . .	6-51
Table 6-15	ICEA S-110-717 Drop Cable Criteria Reference Map . . . . .	6-55
Table 6-16	ICEA S-104-696 Indoor-Outdoor Cable Criteria Reference Map . .	6-58
Table 6-17	Proposed Micro-Duct Optical Fiber Cable Tests . . . . .	6-63
Table 6-18	Mechanical and Environmental Performance Tests for Micro-Duct Fiber Unit . . . . .	6-64

