

Table of Contents

| | |
|--|-----|
| Generic Requirements Notice of Disclaimer | iii |
| List of Figures | ix |
| List of Tables | x |
| Preface | xi |
| | |
| 1 Introduction | |
| 1.1 Purpose and Scope | 1-1 |
| 1.2 Target Audience | 1-1 |
| 1.3 Structure and Use of This Document | 1-1 |
| 1.4 Requirements Terminology | 1-2 |
| 1.5 Requirement Labeling Conventions | 1-2 |
| 1.5.1 Numbering of Requirement and Related Objects | 1-2 |
| 1.5.2 Requirement, Conditional Requirement, and Objective Identification | 1-3 |
| | |
| 2 General Information | |
| 2.1 Product Description | 2-1 |
| 2.2 Deployment Environments | 2-3 |
| 2.3 Installation and Operating Environment | 2-4 |
| 2.3.1 Connector Performance in Harsh Environments | 2-4 |
| 2.4 Related Telcordia Documents | 2-5 |
| 2.5 FDH Component Devices | 2-5 |
| | |
| 3 General Requirements | |
| 3.1 Documentation | 3-1 |
| 3.1.1 Practices | 3-1 |
| 3.2 Markings, Packaging, and Shipping | 3-1 |
| 3.2.1 Identification | 3-1 |
| 3.2.1.1 General | 3-1 |
| 3.2.1.2 Listing | 3-2 |
| 3.2.2 Shipping Container and Packaging Arrangement | 3-2 |
| 3.2.3 Package Label | 3-2 |
| 3.3 Labels | 3-2 |
| 3.4 Consumable Materials | 3-3 |
| 3.5 Product Changes | 3-3 |
| 3.6 Safety and Reliability Considerations | 3-3 |
| 3.7 Installation Size and Weight | 3-4 |
| 3.8 Maintenance | 3-4 |
| 3.9 Components | 3-4 |
| 3.10 Tools | 3-5 |
| 3.11 Quality | 3-5 |
| 3.12 Security | 3-5 |
| | |
| 4 Functional Design Criteria | |
| 4.1 Materials | 4-1 |
| 4.1.1 Metallic Materials | 4-1 |

- 4.1.2 Polymeric and Other Non-Metallic Materials 4-1
- 4.2 Cable Management Compartments 4-2
 - 4.2.1 Cable Entrance Capacity 4-2
 - 4.2.2 Cable Compatibility 4-2
 - 4.2.3 Cable Termination Hardware 4-2
 - 4.2.4 Bonding and Grounding Hardware 4-3
- 4.3 Service Provider Splice Compartment 4-3
 - 4.3.1 Splice Storage Capacity 4-4
 - 4.3.2 Fiber and Splice Protection 4-4
- 4.4 Connector Bulkhead 4-5
 - 4.4.1 Bulkhead Capacity 4-5
 - 4.4.2 Connector Sleeves 4-5
 - 4.4.3 Connector Requirements 4-5
 - 4.4.4 Pigtail Requirements 4-6
- 4.5 Fundamental FDH Requirements 4-6
 - 4.5.1 Deployment Configurations 4-6
 - 4.5.2 Optical Power Monitoring 4-6
 - 4.5.3 FDH Mounting Hardware 4-7
 - 4.5.4 Door Restrainers 4-7
 - 4.5.5 Drainage for Condensate 4-7
 - 4.5.6 Insect Resistance 4-8
 - 4.5.7 Fire Safety 4-8
- 4.6 Finish 4-8
 - 4.6.1 Color 4-8
 - 4.6.2 Appearance 4-9
 - 4.6.3 Paint Adhesion 4-9
 - 4.6.4 Paint Adhesion After Exposure 4-10
 - 4.6.5 Flexibility 4-10
 - 4.6.6 Ultraviolet Resistance 4-10
- 4.7 Screens and Filters 4-10

5 Application-Specific Requirements

- 5.1 General 5-1
 - 5.1.1 Testing 5-1
- 5.2 Electrical Criteria 5-2
 - 5.2.1 Bond Clamp Retention 5-2
 - 5.2.2 AC Fault Test 5-2
- 5.3 Mechanical Criteria 5-2
 - 5.3.1 Cable Clamping 5-5
 - 5.3.2 Sheath Retention 5-6
 - 5.3.2.1 Sheath Retention Test Configuration 5-7
 - 5.3.3 Cable Flexing 5-7
 - 5.3.3.1 Cable Flexing Test Configuration 5-8
 - 5.3.4 Cable Torsion 5-9
 - 5.3.4.1 Cable Torsion Test Configuration 5-10
 - 5.3.5 Vertical Drop 5-10
 - 5.3.5.1 Packaged Equipment Shock Criteria 5-10
 - 5.3.5.1.1 Category A Containers 5-11
 - 5.3.5.1.2 Category B Containers 5-11
 - 5.3.5.2 Unpackaged Equipment Shock Criteria 5-14



| | | |
|-----------|--|------|
| 5.3.6 | Impact Resistance | 5-14 |
| 5.3.7 | Central Member (CM) Protrusion | 5-15 |
| 5.4 | Environmental Criteria | 5-16 |
| 5.4.1 | Accelerated Thermal Aging | 5-17 |
| 5.4.2 | Assembly | 5-17 |
| 5.4.3 | Temperature and Humidity | 5-17 |
| 5.4.4 | Weather Tightness | 5-18 |
| 5.4.5 | Water Resistance | 5-19 |
| 5.4.5.1 | Wind-Driven Rain | 5-20 |
| 5.4.5.2 | Rain Intrusion | 5-21 |
| 5.4.5.3 | Flooded Conditions | 5-22 |
| 5.4.6 | Wind Resistance: Door Restrainers (Vertically Hinged Doors) | 5-22 |
| 5.4.7 | Wind Resistance: Horizontally Hinged Doors | 5-25 |
| 5.4.8 | Wind Resistance | 5-26 |
| 5.4.9 | Corrosion Resistance | 5-29 |
| 5.4.10 | Chemical Resistance | 5-29 |
| 5.4.11 | Ultraviolet Resistance | 5-31 |
| 5.4.12 | Fungus Resistance | 5-32 |
| 5.4.13 | Firearms Resistance | 5-32 |
| 5.4.14 | Fire Resistance | 5-32 |
| 5.4.15 | Rodent Resistance | 5-33 |
| 5.4.16 | Pole-Mounted, Aerial FDH Criteria | 5-34 |
| 5.4.17 | Lifting Details | 5-34 |
| 5.5 | Earthquake, Environmental Vibration, and Transportation Vibration | 5-35 |
| 5.5.1 | Conformance Criteria | 5-36 |
| 5.5.1.1 | Earthquake - Physical Performance Criteria | 5-37 |
| 5.5.1.2 | Earthquake - Functional Performance Criteria | 5-38 |
| 5.5.1.3 | Earthquake - FDH and Anchor Criteria | 5-38 |
| 5.5.1.4 | Environmental Vibration Criteria | 5-39 |
| 5.5.1.5 | Earthquake Test Method Details | 5-39 |
| 5.5.1.5.1 | Environmental Vibration Test Procedure Details | 5-43 |
| 5.5.1.6 | Transportation Vibration—Packaged Equipment Test Plan Details | 5-43 |
| 5.5.1.7 | Static Test Procedure | 5-43 |
| 5.6 | Craft Interaction | 5-45 |
| 5.6.1 | Front Plane Connector Disconnect and Reconnect Test | 5-45 |
| 5.6.1.1 | Conformance Criteria | 5-45 |
| 5.6.1.2 | Measurements | 5-45 |
| 5.6.1.3 | Disconnect and Reconnect Test Procedure | 5-46 |
| 5.6.1.4 | Product Testers | 5-46 |
| 5.6.2 | Rear-Plane Fiber Optic Terminal (FOT) Jumper Disconnect, Adapter Replacement and Reconnect Test | 5-47 |
| 5.6.2.1 | Conformance Criteria | 5-48 |
| 5.6.2.2 | Test Method | 5-48 |
| 5.6.2.3 | Product Testers | 5-49 |

6 Components

Appendix A: Observational Standard

Appendix B: Wind-Driven Rain Test Set-Up Calibration Procedure

Appendix C: References

Appendix D: Glossary

Requirement-Object Index

List of Figures

| | | |
|-------------|--|------|
| Figure 2-1 | Schematic of the Fiber Distribution Hub Role | 2-2 |
| Figure 2-2 | Basic Fiber Distribution Hub | 2-2 |
| Figure 5-1 | Schematic of Feeder-Cable, Monitored Network for Cable Mechanical Tests | 5-4 |
| Figure 5-2 | Schematic of Distribution-Cable, Monitored Network for Cable Mechanical Tests | 5-4 |
| Figure 5-3 | Sheath Retention Test Configuration | 5-7 |
| Figure 5-4 | Cable Flexing Test Configuration | 5-8 |
| Figure 5-5 | Cable Torsion Test Configuration | 5-10 |
| Figure 5-6 | Packaged Drop Surfaces | 5-12 |
| Figure 5-7 | Packaged Drop Test Setup | 5-13 |
| Figure 5-8 | Test Setup for Category B Container, Corner Drop | 5-14 |
| Figure 5-9 | Central Member Protrusion Test Configuration | 5-16 |
| Figure 5-10 | Temperature Humidity Profile (Not to Scale) | 5-18 |
| Figure 5-11 | Dynamic Wind Test | 5-24 |
| Figure 5-12 | Wind Resistance Test Configuration (Part A) | 5-27 |
| Figure 5-13 | Wind Resistance Test Configuration (Part B) | 5-28 |
| Figure 5-14 | Chemical Resistance Test Configuration | 5-30 |
| Figure 5-15 | Test Bar Samples | 5-32 |
| Figure 5-16 | Earthquake Zone Map | 5-36 |
| Figure 5-17 | Earthquake Synthesized Waveform - VERTEQII | 5-40 |
| Figure 5-18 | Required Response Spectra | 5-41 |
| Figure 5-19 | Commercial Transportation Vibration Environment | 5-44 |
| Figure 5-20 | Anthropometric Hand Dimensions to Support Table 5-7 | 5-47 |
| Figure 5-21 | Anthropometric Hand Dimensions to Support Table 5-8 | 5-50 |
| Figure A-1 | Observational Standard | A-1 |
| Figure B-1 | Wind Speed and Rainfall Verification Fixture | B-2 |
| Figure B-2 | Reduction of Water Collection Aperture with an Inclined Rain Gauge During Wind-Drive Rain Testing | B-3 |

List of Tables

| | | |
|------------|--|------|
| Table 2-1 | Deployment Environments for Fiber Distribution Hubs | 2-3 |
| Table 5-1 | Pass/Fail Criteria for Cable/FDH Mechanical Tests | 5-5 |
| Table 5-2 | Cable Pullout Criteria Levels | 5-6 |
| Table 5-3 | Category A Container Packaged Equipment Shock Criteria | 5-11 |
| Table 5-4 | Category B Container Packaged Equipment Shock Criteria | 5-11 |
| Table 5-5 | Unpackaged Equipment Shock Criteria | 5-14 |
| Table 5-6 | Impact Criteria Levels | 5-15 |
| Table 5-7 | Corrosion Resistance Criteria Levels | 5-29 |
| Table 5-8 | Test Result Document References | 5-31 |
| Table 5-9 | Recommended Hand Size of Product Tester | 5-47 |
| Table 5-10 | Recommended Hand Size of Product Tester | 5-50 |