

# Table of Contents

<b>Generic Requirements Notice of Disclaimer</b> . . . . .	iii
<b>List of Figures</b> . . . . .	viii
<b>List of Tables</b> . . . . .	ix
<b>Preface</b> . . . . .	xi
<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 . . . . .	1-1
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
<b>2 General Information</b>	
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
<b>3 General Requirements</b>	
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
<b>4 Functional Design Criteria</b>	
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 . . . . . 4-6
  - 4.5.4 Door Restrainers . . . . . 4-7
  - 4.5.5 Drainage for Condensate . . . . . 4-7
  - 4.5.6 Insect Resistance . . . . . 4-7
  - 4.5.7 Fire Safety . . . . . 4-8
- 4.6 Finish . . . . . 4-8
  - 4.6.1 Color . . . . . 4-8
  - 4.6.2 Appearance . . . . . 4-8
  - 4.6.3 Paint Adhesion . . . . . 4-9
  - 4.6.4 Paint Adhesion After Exposure . . . . . 4-9
  - 4.6.5 Flexibility . . . . . 4-9
- 4.7 Screens and Filters . . . . . 4-9

**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
  - 5.3.5 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 . . . . .	5-16
5.4.2 Assembly . . . . .	5-16
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 Water Intrusion . . . . .	5-19
5.4.6 Chemical Resistance . . . . .	5-20
5.4.7 Fungus Resistance . . . . .	5-22
5.4.8 Rodent Resistance . . . . .	5-22
5.4.9 Lifting Details . . . . .	5-23
5.5 Earthquake, Environmental Vibration, and Transportation Vibration . . . . .	5-23
5.5.1 Conformance Criteria . . . . .	5-24
5.5.1.1 Earthquake - Physical Performance Criteria . . . . .	5-25
5.5.1.2 Earthquake - Functional Performance Criteria . . . . .	5-26
5.5.1.3 Earthquake - FDH and Anchor Criteria . . . . .	5-26
5.5.1.4 Environmental Vibration Criteria . . . . .	5-27
5.5.1.5 Earthquake Test Method Details . . . . .	5-28
5.5.1.5.1 Environmental Vibration Test Procedure Details . . . . .	5-31
5.5.1.6 Transportation Vibration—Packaged Equipment Test Plan Details . . . . .	5-31
5.5.1.7 Static Test Procedure . . . . .	5-31
5.6 Airborne Contaminants . . . . .	5-33
5.6.1 Conformance Criteria - Airborne Contaminants . . . . .	5-34
5.6.2 Optional Airborne Contaminants Test . . . . .	5-34
5.6.2.1 Gaseous Contaminants Test Method . . . . .	5-35
5.6.2.2 Two Cleaning Procedures for Copper Coupons . . . . .	5-38
5.6.2.3 Test Procedure - Mixed Flowing Gas . . . . .	5-40
5.6.2.4 Measuring Parameters . . . . .	5-41
5.6.2.4.1 Safety Procedures for Testing Gaseous Contaminants . . . . .	5-42
5.7 Craft Interaction . . . . .	5-42
5.7.1 Front Plane Connector Disconnect and Reconnect Test . . . . .	5-42
5.7.1.1 Conformance Criteria . . . . .	5-43
5.7.1.2 Measurements . . . . .	5-43
5.7.1.3 Disconnect and Reconnect Test Procedure . . . . .	5-43
5.7.1.4 Product Testers . . . . .	5-44
5.7.2 Rear-Plane Fiber Optic Terminal (FOT) Jumper Disconnect, Adapter Replacement and Reconnect Test . . . . .	5-46
5.7.2.1 Conformance Criteria . . . . .	5-46
5.7.2.2 Test Method . . . . .	5-46
5.7.2.3 Product Testers . . . . .	5-47

## 6 Components

### Appendix A: Observational Standard

### Appendix B: References

### Appendix C: 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 . . . . .	5-13
Figure 5-9	Central Member Protrusion Test Configuration . . . . .	5-15
Figure 5-10	Temperature Humidity Profile (Not to Scale) . . . . .	5-18
Figure 5-11	Chemical Resistance Test Configuration . . . . .	5-22
Figure 5-12	Earthquake Zone Map . . . . .	5-24
Figure 5-13	Earthquake Synthesized Waveform - VERTEQII . . . . .	5-28
Figure 5-14	Required Response Spectra . . . . .	5-29
Figure 5-15	Commercial Transportation Vibration Environment . . . . .	5-32
Figure 5-16	Anthropometric Hand Dimensions to Support Table 5-7 . . . . .	5-45
Figure 5-17	Anthropometric Hand Dimensions to Support Table 5-8 . . . . .	5-48
Figure A-1	Observational Standard . . . . .	A-1



# 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 . . . . .	5-14
Table 5-7	Indoor Contaminant Levels . . . . .	5-34
Table 5-8	Typical Coupon Weight Gains During MFG Exposures . . . . .	5-40
Table 5-9	Target Air Composition and Duration of MFG Testing for Equipment Designated for Indoor or Outdoor Use . . . . .	5-41
Table 5-10	Recommended Hand Size of Product Tester . . . . .	5-45
Table 5-11	Recommended Hand Size of Product Tester . . . . .	5-48