
Generic Criteria for Dispersion Test Sets

Contents

[Telcordia GR-761-Documentation Information](#)

1. Introduction.....	1-1
1.1 Purpose and Scope of Document	1-1
1.2 Organization	1-1
1.3 Summary of Substantive Changes from the TR.....	1-2
1.4 Requirements and Objectives 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 Object Identification	1-3
2. General Information.....	2-1
2.1 Chromatic Dispersion.....	2-1
2.1.1 Definitions.....	2-1
2.1.2 Effects and Causes	2-1
2.1.3 Pulse Broadening	2-2
2.1.4 Dispersion-Limited Length	2-3
2.1.5 Dispersion Compensation	2-5
2.2 Polarization-Mode Dispersion.....	2-6
2.3 Product Description.....	2-6
2.4 Measurement Techniques.....	2-7
2.4.1 The Pulse-Delay Method.....	2-8
2.4.2 The Phase-Shift Method.....	2-9
2.4.3 The Differential Phase-Shift Method	2-10
2.5 Fiber Dispersion Types	2-11
2.5.1 Fiber Link Types.....	2-11
2.5.2 Dispersion Format.....	2-12
2.5.3 Dispersion Specification	2-13
3. Design Criteria	3-1
3.1 Display and Control Features	3-1
3.2 Operation.....	3-2
3.3 Mechanical Design.....	3-3
3.4 Maintenance	3-4
3.5 Product Information	3-5
3.5.1 Documentation	3-5
3.5.2 Performance Specification Sheet	3-5
3.6 Product and Packaging Markings.....	3-6
3.6.1 Product Markings	3-6
3.6.2 Packaging Markings.....	3-7

3.7	Laser Protection.....	3-7
4.	Operational/Environmental Criteria.....	4-1
4.1	Operation.....	4-1
4.1.1	Measurement Comparison	4-1
4.1.2	Measurement Repeatability.....	4-1
4.1.3	Dynamic Range.....	4-2
4.1.4	Minimum Test Fiber Length	4-2
4.1.5	Reflection Sensitivity	4-2
4.1.6	Measurement Time.....	4-2
4.2	Mechanical Design.....	4-2
4.2.1	Shock Tests	4-3
4.2.1.1	Shipment from Manufacturer.....	4-3
4.2.1.2	Local Transportation.....	4-3
4.2.1.3	During Use.....	4-3
4.2.2	Vibration Test.....	4-3
4.3	Environment	4-3
4.4	Power.....	4-4
4.5	Electromagnetic Interference and Electrostatic Discharge	4-4
4.5.1	Electromagnetic Interference	4-4
4.5.2	Electrostatic Discharge.....	4-4
4.6	Protection	4-5
4.6.1	Grounding	4-5
4.6.2	Leakage Current.....	4-5
4.6.3	Hot Surfaces	4-5
5.	Performance Test Procedures.....	5-1
5.1	Operation.....	5-2
5.1.1	Measurement Comparison	5-2
5.1.2	Measurement Repeatability.....	5-3
5.1.3	Dynamic Range.....	5-3
5.1.4	Minimum Test Fiber Length	5-3
5.1.5	Reflection Sensitivity	5-4
5.1.6	Measurement Time.....	5-4
5.2	Mechanical Design.....	5-5
5.2.1	Shock Tests	5-5
5.2.1.1	Shipment from Manufacturer.....	5-5
5.2.1.2	Free Fall Drop.....	5-5
5.2.1.3	Free Fall Corner Drop.....	5-5
5.2.1.4	Local Transportation.....	5-6
5.2.1.5	During Use.....	5-6
5.2.1.6	Vibration Test	5-7
5.3	Power.....	5-7
5.4	Environment	5-7
5.4.1	Non-Operating Environment.....	5-7

5.4.2	Operating Environment.....	5-8
5.5	Electromagnetic Interference and Electrostatic Discharge	5-8
5.5.1	Electromagnetic Interference	5-8
5.5.2	Electrostatic Discharge.....	5-8
5.6	Protection	5-8
5.6.1	Grounding	5-8
5.6.2	Leakage Current	5-9
5.6.3	Hot Surfaces	5-9
References	References-1
Glossary	Glossary-1

List of Figures

Figure 2-1.	Typical Dispersion Test Set Measurement	2-7
Figure 2-2.	Pulse-Delay Method Schematic.....	2-8
Figure 2-3.	Phase-Shift Method Schematic.....	2-9
Figure 2-4.	Differential Phase-Shift Method Schematic	2-10
Figure 5-1.	Dynamic Range Test Setup	5-4
Figure 5-2.	Reflection Sensitivity Test Setup.....	5-4

List of Tables

Table 2-1.	Transmission Length Limits Determined by Attenuation and Dispersion	2-4
Table 2-2.	Single-Mode Fiber Types	2-11
Table 2-3.	Analytic Expressions for Various Fiber Types.....	2-12
Table 4-1.	Measurement Repeatability Requirements	4-1
Table 4-2.	Environmental Extreme Requirements	4-4
Table 5-1.	Drop Test Heights.....	5-6
Table 5-2.	Vibration Test Parameters	5-7