

# Contents

## Telcordia TR-NWT-000937 Documentation Information

|                                                                  |      |
|------------------------------------------------------------------|------|
| <b>Notice Of Disclaimer</b> . . . . .                            | iii  |
| <b>List of Figures</b> . . . . .                                 | viii |
| <b>List of Tables</b> . . . . .                                  | ix   |
| <b>1 Introduction</b>                                            |      |
| 1.1 General Product Description . . . . .                        | 1-1  |
| 1.2 Application of this Document . . . . .                       | 1-2  |
| 1.3 Requirements Terminology . . . . .                           | 1-3  |
| <b>2 General Requirements</b>                                    |      |
| 2.1 Network Side . . . . .                                       | 2-1  |
| 2.1.1 Termination Capacity . . . . .                             | 2-1  |
| 2.1.2 Connectorized Input . . . . .                              | 2-1  |
| 2.1.3 Cable Entrance . . . . .                                   | 2-1  |
| 2.2 Protector Module . . . . .                                   | 2-1  |
| 2.2.1 Protector Panel and Associated Protector Units . . . . .   | 2-2  |
| 2.2.2 Plating Finish of Pins and Terminal . . . . .              | 2-2  |
| 2.2.3 Protector Panel Ground Bus Integrity . . . . .             | 2-2  |
| 2.2.4 Protector Block Installation/Removal Orientation . . . . . | 2-3  |
| 2.2.5 Protector Output Conductors . . . . .                      | 2-3  |
| 2.2.6 Color Coding and Marking . . . . .                         | 2-3  |
| 2.3 Optional Features . . . . .                                  | 2-4  |
| 2.3.1 Replaceable Parts . . . . .                                | 2-4  |
| 2.3.2 Cross Connect Field . . . . .                              | 2-4  |
| 2.4 Wire Wrap Terminals . . . . .                                | 2-4  |
| 2.5 Grounding Connectors . . . . .                               | 2-4  |
| 2.6 Listing . . . . .                                            | 2-5  |
| 2.7 Materials . . . . .                                          | 2-5  |
| 2.8 Construction Safety . . . . .                                | 2-6  |
| 2.9 Building Entrance Terminal Layout . . . . .                  | 2-6  |
| 2.10 Network Interface Module . . . . .                          | 2-7  |
| 2.10.1 Network Interface Non-Connectorized Terminals . . . . .   | 2-7  |
| 2.10.2 Network Interface Connectorized Terminations . . . . .    | 2-7  |
| 2.10.3 Ventilation and Drain Port . . . . .                      | 2-8  |
| 2.11 Instructions . . . . .                                      | 2-8  |
| 2.12 Marking . . . . .                                           | 2-8  |
| 2.13 Packing and Shipping . . . . .                              | 2-8  |
| 2.14 Quality Assurance . . . . .                                 | 2-8  |
| 2.14.1 Quality Program Analysis . . . . .                        | 2-8  |
| 2.14.2 Product Quality Surveillance . . . . .                    | 2-9  |
| 2.15 Product Design Change . . . . .                             | 2-9  |

|        |                              |      |
|--------|------------------------------|------|
| 2.16   | Exit Cable Seal              | 2-10 |
| 2.17   | Seals and Gaskets            | 2-10 |
| 2.18   | Strain Relief and Wire Ties  | 2-10 |
| 2.19   | Subscriber Distribution List | 2-10 |
| 2.20   | Flammability                 | 2-11 |
| 2.21   | Additional Components        | 2-11 |
| 2.22   | Finish                       | 2-11 |
| 2.23   | Stub Cable                   | 2-12 |
| 2.23.1 | Cable Construction           | 2-12 |
| 2.23.2 | Cable Attachment             | 2-12 |
| 2.23.3 | Flame Retardant Stub Cables  | 2-13 |
| 2.24   | Modular Jacks and Plugs      | 2-13 |
| 2.24.1 | Contact Construction         | 2-13 |
| 2.24.2 | Contacts                     | 2-14 |
| 2.24.3 | Insertion Criteria           | 2-15 |
| 2.24.4 | Go/No Go                     | 2-15 |

### 3 Electrical Requirements

|       |                                                       |     |
|-------|-------------------------------------------------------|-----|
| 3.1   | Dielectric Withstand of Network Interface Module      | 3-1 |
| 3.2   | Dielectric Withstand of BET                           | 3-1 |
| 3.3   | Series Resistance                                     | 3-2 |
| 3.4   | Connector Series Resistance                           | 3-2 |
| 3.4.1 | 710 Type Connector Series Resistance                  | 3-2 |
| 3.4.2 | Network Interface Connector Series Resistance         | 3-2 |
| 3.5   | Insulation Resistance                                 | 3-3 |
| 3.6   | Longitudinal Balance                                  | 3-3 |
| 3.7   | Fusing Coordination                                   | 3-4 |
| 3.8   | Crosstalk                                             | 3-4 |
| 3.8.1 | Attenuation                                           | 3-4 |
| 3.8.2 | Crosstalk                                             | 3-5 |
| 3.8.3 | T-1 Carrier System Crosstalk                          | 3-6 |
| 3.9   | Current Carrying Capability of Grounding Connector    | 3-6 |
| 3.10  | Network Interface Module Current Capacity             | 3-7 |
| 3.11  | Contact Resistance of Grounding Connector             | 3-7 |
| 3.12  | First and Second Level Surge and AC Power Fault Tests | 3-7 |
| 3.13  | Surge Test (20,000 A)                                 | 3-8 |
| 3.14  | Connector Surge Requirement                           | 3-8 |
| 3.15  | Shield Bond Ampacity                                  | 3-8 |

### 4 Environmental Requirements

|     |                                   |     |
|-----|-----------------------------------|-----|
| 4.1 | High Temperature                  | 4-1 |
| 4.2 | Temperature Cycling with Humidity | 4-1 |
| 4.3 | Shock and Vibration               | 4-2 |
| 4.4 | Ground Conductor Pull-Out         | 4-2 |
| 4.5 | Torque Test                       | 4-3 |
| 4.6 | Rain Test                         | 4-3 |

|                                                    |     |
|----------------------------------------------------|-----|
| 4.7 Salt Fog Test . . . . .                        | 4-3 |
| 4.8 Sunshine Test (Polymer OBET) . . . . .         | 4-4 |
| 4.9 Chemical Resistance . . . . .                  | 4-4 |
| 4.10 Protection Panel Contact Resistance . . . . . | 4-5 |
| 4.11 Bullet Resistance . . . . .                   | 4-6 |
| 4.12 Impact Resistance . . . . .                   | 4-7 |
| 4.13 Sand and Dust . . . . .                       | 4-7 |

**5 Test Waveform Validation**

|                                    |     |
|------------------------------------|-----|
| 5.1 Second-Level Heading . . . . . | 5-1 |
|------------------------------------|-----|

**Appendix A: Paint Defect Test Procedure**

**Appendix B: Protector Unit Pin and Socket Assembly**

**Appendix C: References**

|                                                                               |     |
|-------------------------------------------------------------------------------|-----|
| Note . . . . .                                                                | A-3 |
| To Contact Telcordia Customer Service or to Order Documents . . . . .         | A-3 |
| To Order Documents Online From the Telcordia Information SuperStore . . . . . | A-3 |
| To Order Documents From Within Telcordia (Employees Only) . . . . .           | A-3 |
| For New Information on Telcordia Licensed Products . . . . .                  | A-4 |

**Appendix D: Glossary**

## List of Figures

|            |                                                                                 |      |
|------------|---------------------------------------------------------------------------------|------|
| Figure 3-1 | Longitudinal-to-Metallic Balance Performance . . . . .                          | 3-9  |
| Figure 3-2 | T-1 Crosstalk . . . . .                                                         | 3-9  |
| Figure 3-3 | A BET with a Mated Modular Jack and Plug . . . . .                              | 3-10 |
| Figure 4-1 | 600 Foot Cable Loop Simulator . . . . .                                         | 4-8  |
| Figure 4-2 | Circuit for Environmental Tests . . . . .                                       | 4-9  |
| Figure 4-3 | Temperature/Humidity Cycle with Relative Humidity at 90 to 95% . . . . .        | 4-10 |
| Figure 5-1 | Definition of Voltage Rate of Rise . . . . .                                    | 5-2  |
| Figure 5-2 | Definitions of Double Exponential Waveform of<br>Duration A/B Seconds . . . . . | 5-3  |
| Figure A-1 | Paint Defect Testing Arrangement . . . . .                                      | A-2  |
| Figure A-2 | Test Circuit for Paint Test . . . . .                                           | A-3  |

## List of Tables

|           |                                                 |     |
|-----------|-------------------------------------------------|-----|
| Table 2-1 | Insertion and Withdrawal Force Limits . . . . . | 2-3 |
| Table 2-2 | Color Coding . . . . .                          | 2-4 |
| Table 3-1 | Maximum Average Attenuation . . . . .           | 3-4 |
| Table 3-2 | Near End Crosstalk (NEXT) . . . . .             | 3-5 |