

Contents [Telcordia GR-782-Documentation Information](#)

Preface Preface-1

1. Introduction 1-1

 1.1 Scope 1-1

 1.2 Definitions 1-2

 1.3 Change History 1-3

2. Examples of Functions and Applications 2-1

 2.1 Functions 2-1

 2.2 Applications 2-2

 2.2.1 Hubbing 2-3

3. General Criteria 3-1

4. Network Compatibility Criteria 4-1

 4.1 Optical and Electrical SONET Interfaces 4-2

5. SONET Format 5-1

 5.1 Byte-Synchronous Mapping 5-1

 5.2 Overhead Processing in the Intraoffice Environment 5-3

 5.2.1 Overhead for Performance Monitoring 5-4

 5.2.2 End-to-End Performance Monitoring 5-4

 5.2.3 Embedded Operations Channels (EOCs) 5-4

 5.2.4 Maintenance Signals 5-5

 5.2.5 Other Overhead Functions 5-5

 5.3 Overhead Processing in the Interoffice Environment (Optional) 5-9

6. Transmission Criteria 6-1

 6.1 Synchronization 6-1

 6.2 Jitter and Wander 6-1

 6.3 Framing Requirements 6-2

 6.4 Pointer Processing 6-2

 6.5 Unassigned Channel Patterns 6-2

 6.6 Signaling 6-2

 6.6.1 Common Channel Signaling (CCS) 6-4

7. Maintenance Criteria 7-1

 7.1 Failure States 7-1

 7.2 Maintenance Signals and Alarm Conditions 7-1

 7.3 Red Alarm 7-4

 7.4 Trunk Conditioning 7-4

 7.5 System Maintenance 7-4

 7.5.1 Hardware Redundancy 7-4

 7.5.2 Trouble Notification 7-4

 7.5.3 Trouble Isolation 7-5

 7.6 Line Protection Switching 7-5

 7.6.1 Signal Degradation/Failures 7-5

| | | |
|-------|---|--------------|
| 7.6.2 | Protection Switch Architectures | 7-6 |
| 7.7 | Performance Monitoring | 7-6 |
| 7.7.1 | Intraoffice Environment | 7-6 |
| 7.7.2 | Interoffice Environment | 7-6 |
| 8. | Reliability and Quality | 8-1 |
| | Appendix A: SONET Digital Switch Trunk Interface Criteria Checklist | A-1 |
| | References | References-1 |
| | Glossary | Glossary-1 |

List of Figures

| | | |
|------------|---|-----|
| Figure 1. | SONET OC-N Interface Application | 2-2 |
| Figure 2. | Example: Digital Switch Interconnection | 2-2 |
| Figure 3. | Hub Applications | 2-3 |
| Figure 4. | SONET Side-Door Ports Application | 2-4 |
| Figure 5. | Examples of Intraoffice Interconnect Signals | 4-1 |
| Figure 6. | STS-1 Frame | 5-1 |
| Figure 7. | Byte-Synchronous Mapping for DS1 Payload | 5-2 |
| Figure 8. | STS Path | 5-3 |
| Figure 9. | VT Multiframe Indicator Byte (H4) Reduced Coding Sequence | 5-7 |
| Figure 10. | Out-Slot Signaling Assignments for 24-Channel Signaling Operations 6-3 | |
| Figure 11. | SONET Maintenance Alarms | 7-2 |
| Figure 12. | Response to SONET Maintenance Signals | 7-3 |

List of Tables

| | | |
|----------|--|------|
| Table 1. | Section and Line Level Functions, Intraoffice Environment . . | 5-8 |
| Table 2. | STS and VT Path Functions, Intraoffice and Interoffice | 5-9 |
| Table 3. | Section and Line Level Functions, Interoffice Environment . | 5-10 |