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Prenos in multipleksiranje (TM) ï Generiļ ne zahteve za prenosno funkcionalnost opreme ï 3-2. del: Funkcije plasti regeneratorskega in multipleksnega odseka za sinhroni prenosni modul-N (STM-N) ï Proforma specifikacija izjave o skladnosti izvedbe (ICS)

Transmission and Multiplexing (TM); Generic requirements of transport functionality of equipment; Part 3-2: Synchronous Transport Module-N (STM-N) regenerator and multiplex section layer functions; Implementation Conformance Statement (ICS) proforma specification

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SIST EN 300 417-3-2 V1.1.3:2003

Contents

Intellectual Property Rights 9

Foreword 9

Introduction 10

1 Scope 11

2 References 11

3 Definitions and abbreviations 12
3.1 Definitions 12
3.2 Abbreviations 12

4 Conformance to this ICS proforma specification 15

Annex A (normative): ICS proforma for EN 300 417-3-1 16

A.1 Guidance for completing the ICS proforma 16
A.1.1 Purposes and structure 16
A.1.2 Abbreviations and conventions 16
A.1.3 Instructions for completing the ICS proforma 18

Annex B (normative): ICS proforma for STM-1 regenerator section layer 19

B.1 Identification of the implementation 19
B.1.1 Date of the statement 19
B.1.2 Implementation Under Test (IUT) identification 19
B.1.3 System Under Test (SUT) identification 20
B.1.4 Product supplier 20
B.1.5 Client 21
B.1.6 ICS contact person 21

B.2 Identification of the EN 22

B.3 Global statement of conformance of STM-1 Regenerator Section (RS1) layer 22

B.4 RS1 Layer function 23
B.4.1 RS1 layer description 23
B.4.2 RS1 layer transmission tables 24
B.4.2.1 RS1 connection function: RS1_C 24
B.4.2.2 STM-1 regenerator section layer trail termination functions: RS1_TT_So and RS1_TT_Sk 24
B.4.2.2.1 Frame alignment signal 24
B.4.2.2.2 FAS generation 24
B.4.2.2.3 Signal scrambling / descrambling 25
B.4.2.2.4 In service error monitoring process 26
B.4.2.2.5 Trail Trace Identifier (TTI) 27
B.4.2.3 RS1 layer to MS1 Layer adaptation functions: RS1/MS1_A_So and RS1/MS1_A_Sk 29
B.4.2.3.1 RS1 layer to STM-1 Multiplex Section (MS1) layer multiplexing and demultiplexing processes 29
B.4.2.4 RS1 layer to DCC Layer adaptation functions: RS1/DCC_A_So and RS1/DCC_A_Sk 29
B.4.2.4.1 RS1 layer to DCC layer multiplexing and demultiplexing processes 29
B.4.2.5 RS1 layer to P0s layer adaptation functions: RS1/P0s_A_So-N and RS1/P0s_A_Sk-N 30
B.4.2.5.1 RS1 layer to P0s layer multiplexing and demultiplexing processes 30
B.4.2.5.2 RS1 layer to P0s layer frequency justification and bitrate adaptation processes 30
B.4.2.6 RS1 layer to V0x layer adaptation functions: RS1/V0x_A_So and RS1/V0x_A_Sk 31
B.4.2.6.1 RS1 layer to V0x layer multiplexing and demultiplexing processes 31
B.4.3 Defect, fault and performance monitoring 32
B.4.3.1 Trail termination point mode management 32
B.4.3.2 Defect detection and clearance criteria 32
B.4.3.3 Consequent action activation and clearance criteria 33

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SIST EN 300 417-3-2 V1.1.3:2003

B.4.3.4 Defect correlation 34

Annex C (normative): ICS proforma for STM-1 multiplex section layer 35

C.1 Identification of the implementation 35
C.1.1 Date of the statement 35
C.1.2 Implementation Under Test (IUT) identification 35
C.1.3 System Under Test (SUT) identification 35
C.1.4 Product supplier 36
C.1.5 Client 36
C.1.6 ICS contact person 37

C.2 Identification of the EN 37

C.3 Global statement of conformance of MS1 layer 37

C.4 MS1 section layer function 38
C.4.1 MS1 layer description 38
C.4.2 MS1 layer transmission tables 40
C.4.2.1 MS1 connection function: MS1_C 40
C.4.2.2 MS1 layer trail termination functions: MS1_TT_So and MS1_TT_Sk 41
C.4.2.2.1 In service error monitoring process 41
C.4.2.2.2 Server layer status monitoring process 42
C.4.2.2.2.1 MS1 Alarm Indication Signal (MS1 AIS) 42
C.4.2.2.3 Remote indicators monitoring process 42
C.4.2.2.3.1 MS1 Remote Defect Indication (MS1 RDI) 42
C.4.2.2.3.2 MS1 Remote Error Indication (REI) (MS1 REI) 43
C.4.2.3 MS1 layer to S4 layer adaptation functions: MS1/S4_A_So and MS1/S4_A_Sk 44
C.4.2.3.1 MS1 layer to S4 Layer frequency justification and bitrate adaptation processes 44
C.4.2.3.2 MS1 layer to S4 layer alignment process 45
C.4.2.3.2.1 AU-4 pointer generation 47
C.4.2.3.2.2 AU-4 pointer interpretation 50
C.4.2.3.3 MS1 layer to S4 layer multiplexing and demultiplexing processes 55
C.4.2.4 MS1 layer to DCC layer adaptation functions: MS1/DCC_A_So and MS1/DCC_A_Sk 55
C.4.2.4.1 MS1 layer to DCC layer multiplexing and demultiplexing processes 55
C.4.2.5 MS1 layer to P0s layer adaptation functions: MS1/P0s_A_So and MS1/P0s_A_Sk 56
C.4.2.5.1 MS1 layer to P0s layer frequency justification and bitrate adaptation processes 56
C.4.2.5.2 MS1 layer to P0s layer multiplexing and demultiplexing processes 56
C.4.3 MS1 linear trail protection transmission tables 57
C.4.3.1 MS1 linear trail protection connection functions: MS1P1+1_C and MS1P1:n_C 59
C.4.3.2 MS1 linear protection trail termination functions: MS1P_TT_So and MS1P_TT_Sk 60
C.4.3.3 MS1 linear trail protection adaptation functions: MS1/MS1P_A_So and MS1/MS1P_A_Sk 61
C.4.3.3.1 MS1 layer to MS1 protection layer multiplexing and demultiplexing processes 61
C.4.3.4 MS1 linear trail protection processes 61
C.4.3.4.1 Automatic Protection Switching (APS) externally initiated commands 61
C.4.3.4.2 Automatic Protection Switching (APS) automatically initiated commands 63
C.4.3.4.3 Automatic Protection Switching (APS) generalities 64
C.4.3.4.4 Automatic Protection Switching (APS) switch performance 65
C.4.3.4.5 Automatic Protection Switching (APS) subprocesses 65
C.4.3.4.6 Automatic Protection Switching (APS) signal generation 67
C.4.3.4.7 Automatic Protection Switching (APS) signal interpretation 68
C.4.3.4.8 Automatic Protection Switching (APS) status report 69
C.4.4 MS1 layer defect, fault and performance monitoring tables 69
C.4.4.1 Port status management 69
C.4.4.2 Defect detection and clearance criteria 70
C.4.4.3 Consequent action activation and clearance criteria 72
C.4.4.4 Defect correlation 74
C.4.4.5 Performance monitoring 75
C.4.4.5.1 Near end performance monitoring 75
C.4.4.5.2 Far end performance monitoring 75
C.4.4.5.3 Pointer performance monitoring 76
C.4.5 MS1 protection layer defect, fault and performance monitoring tables 76

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SIST EN 300 417-3-2 V1.1.3:2003
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SIST EN 300 417-3-2 V1.1.3:2003

C.4.5.1 Defect detection and clearance criteria 76
C.4.5.2 Consequent action activation and clearance criteria 78
C.4.5.3 Defect correlation 79
C.4.5.4 Performance monitoring 80

Annex D (normative): ICS proforma for STM-4 regenerator section layer 81

D.1 Identification of the implementation 81
D.1.1 Date of the statement 81
D.1.2 Implementation Under Test (IUT) identification 81
D.1.3 System Under Test (SUT) identification 81
D.1.4 Product supplier 82
D.1.5 Client 82
D.1.6 ICS contact person 83

D.2 Identification of the EN 83

D.3 Global statement of conformance of RS-4 regenerator section (RS4) 83

D.4 RS4 section layer function 84
D.4.1 STM-4 regenerator section layer description 84
D.4.2 RS-4 regenerator section Layer Transmission Tables 85
D.4.2.1 RS-4 regenerator section connection function: RS4_C 85
D.4.2.2 RS-4 regenerator section layer trail termination functions: RS4_TT_So and RS4_TT_Sk 85
D.4.2.2.1 FAS 85
D.4.2.2.2 FAS generation 85
D.4.2.2.3 Signal scrambling / descrambling 86
D.4.2.2.4 In service error monitoring process 87
D.4.2.2.5 Trail Trace Identifier (TTI) 88
D.4.2.3 STM-4 regenerator section layer to MS4 layer adaptation functions: RS4/MS4_A_So and RS4/MS4_A_Sk 90
D.4.2.3.1 RS4 layer to MS4 layer multiplexing and demultiplexing processes 90
D.4.2.4 STM-4 regenerator section layer to DCC layer adaptation functions: RS4/DCC_A_So and RS4/DCC_A_Sk 90
D.4.2.4.1 RS4 layer to DCC layer multiplexing and demultiplexing processes 90
D.4.2.5 STM-4 regenerator section layer to P0s layer adaptation functions: RS4/P0s_A_So-N and RS4/P0s_A_Sk-N 91
D.4.2.5.1 RS4 layer to P0s layer multiplexing and demultiplexing processes 91
D.4.2.5.2 RS4 layer to P0s layer frequency justification and bitrate adaptation processes 91
D.4.2.6 STM-4 regenerator section layer to V0x layer adaptation functions: RS4/V0x_A_So and RS4/V0x_A_Sk 92
D.4.2.6.1 RS4 layer to V0x layer multiplexing and demultiplexing processes 92
D.4.3 Defect, fault and performance monitoring 93
D.4.3.1 Trail termination point mode management 93
D.4.3.2 Defect detection and clearance criteria 93
D.4.3.3 Consequent action activation and clearance criteria 94
D.4.3.4 Defect correlation 95

Annex E (normative): ICS proforma for STM-4 multiplex section layer 96

E.1 Identification of the implementation 96
E.1.1 Date of the statement 96
E.1.2 Implementation Under Test (IUT) identification 96
E.1.3 System Under Test (SUT) identification 96
E.1.4 Product supplier 97
E.1.5 Client 97
E.1.6 ICS contact person 98

E.2 Identification of the EN 98

E.3 Global statement of conformance of STM-4 Multiplex Section (MS4) layer 98

E.4 MS4 layer function 99
E.4.1 MS4 layer Description 99

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https://standards.iteh.ai/catalog/standards/sist/99b601c9-794e-4e2d-94c1-f52671ad514b/sist-en-300-417-3-2-v1.1.3-2003

SIST EN 300 417-3-2 V1.1.3:2003

E.4.2 MS4 layer transmission tables 101
E.4.2.1 MS4 connection function: MS4_C 102
E.4.2.2 MS4 layer trail termination functions: MS4_TT_So and MS4_TT_Sk 102
E.4.2.2.1 In service error monitoring process 102
E.4.2.2.2 Server layer status monitoring process 103
E.4.2.2.2.1 MS4 Alarm Indication Signal (MS4 AIS) 103
E.4.2.2.3 Remote indicators monitoring process 103
E.4.2.2.3.1 MS4 Remote Defect Indication (RDI) (MS4 RDI) 103
E.4.2.2.3.2 MS4 Remote Error Indication (REI) (MS4 REI) 104
E.4.2.3 MS4 layer to S4 layer adaptation functions: MS4/S4_A_So and MS4/S4_A_Sk 105
E.4.2.3.1 MS4 layer to S4 layer frequency justification and bitrate adaptation processes 106
E.4.2.3.2 MS4 layer to S4 layer alignment process 106
E.4.2.3.2.1 AU pointer generation 108
E.4.2.3.2.2 AU pointer interpretation 111
E.4.2.3.3 MS4 layer to S4 layer multiplexing and demultiplexing processes 116
E.4.2.4 MS4 layer to S4-4c layer adaptation functions: MS4/S4-4c_A_So and MS4/S4-4c_A_Sk 116
E.4.2.4.1 MS4 layer to S4-4c layer frequency justification and bitrate adaptation processes 117
E.4.2.4.2 MS4 layer to S4-4c layer alignment process 117
E.4.2.4.2.1 Concatenation indicator recovery process 119
E.4.2.4.3 MS4 layer to S4-4c layer multiplexing and demultiplexing processes 121
E.4.2.5 MS4 layer to DCC Layer adaptation functions: MS4/DCC_A_So and MS4/DCC_A_Sk 121
E.4.2.5.1 MS4 layer to DCC layer multiplexing and demultiplexing processes 121
E.4.2.6 MS4 layer to P0s layer adaptation functions: MS4/P0s_A_So and MS4/P0s_A_Sk 122
E.4.2.6.1 MS4 layer to P0s layer frequency justification and bitrate adaptation processes 122
E.4.2.6.2 MS4 layer to P0s layer multiplexing and demultiplexing processes 122
E.4.3 MS4 Linear Trail Protection Transmission Tables 123
E.4.3.1 MS4 Linear Trail Protection Connection Functions: MS4P1+1_C and MS4P1:n_C 125
E.4.3.2 MS4 Linear Protection Trail Termination Functions: MS4P_TT_So and MS4P_TT_Sk 126
E.4.3.3 MS4 Linear Trail Protection Adaptation Functions: MS4/MS4P_A_So and MS4/MS4P_A_Sk 127
E.4.3.3.1 MS4 layer to MS4 Protection layer multiplexing and demultiplexing processes 127
E.4.3.4 MS4 Linear Trail Protection processes 127
E.4.3.4.1 Automatic Protection Switching (APS) externally initiated commands 127
E.4.3.4.2 Automatic Protection Switching (APS) automatically initiated commands 129
E.4.3.4.3 Automatic Protection Switching (APS) generalities 130
E.4.3.4.4 Automatic Protection Switching (APS) switch performance 131
E.4.3.4.5 Automatic Protection Switching (APS) subprocesses 131
E.4.3.4.6 Automatic Protection Switching (APS) signal generation 133
E.4.3.4.7 Automatic Protection Switching (APS) signal interpretation 134
E.4.3.4.8 Automatic Protection Switching (APS) status report 135
E.4.4 MS4 layer defect, fault and performance monitoring tables 135
E.4.4.1 Port status management 135
E.4.4.2 Defect detection and clearance criteria 136
E.4.4.3 Consequent action activation and clearance criteria 139
E.4.4.4 Defect correlation 142
E.4.4.5 Performance monitoring 143
E.4.4.5.1 Near end performance monitoring 143
E.4.4.5.2 Far end performance monitoring 143
E.4.4.5.3 Pointer performance monitoring 144
E.4.5 MS4 linear trail protection defect, fault and performance monitoring tables 144
E.4.5.1 Defect detection and clearance criteria 144
E.4.5.2 Consequent action activation and clearance criteria 146
E.4.5.3 Defect correlation 147
E.4.5.4 Performance monitoring 148

Annex F (normative): ICS proforma for STM-16 regenerator section layer 149

F.1 Identification of the implementation 149
F.1.1 Date of the statement 149
F.1.2 Implementation Under Test (IUT) identification 149
F.1.3 System Under Test (SUT) identification 149
F.1.4 Product supplier 150

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SIST EN 300 417-3-2 V1.1.3:2003
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SIST EN 300 417-3-2 V1.1.3:2003

F.1.5 Client 150
F.1.6 ICS contact person 151
F.2 Identification of the EN 151
F.3 Global statement of conformance of STM-16 Regenerator Section (RS16) layer 151
F.4 RS16 Section Layer function 152
F.4.1 RS16 layer description 152
F.4.2 STM-16 regenerator section layer transmission tables 153
F.4.2.1 STM-16 Regenerator section connection function: RS16_C 153
F.4.2.2 RS16 layer trail termination functions: RS16_TT_So and RS16_TT_Sk 153
F.4.2.2.1 FAS 153
F.4.2.2.2 Frame Alignment Signal generation 153
F.4.2.2.3 Signal scrambling / descrambling 154
F.4.2.2.4 In service error monitoring process 155
F.4.2.2.5 Trail Trace Identifier (TTI) 156
F.4.2.3 STM-16 regenerator section layer to MS16 Layer adaptation functions: RS16/MS16_A_So and RS16/MS16_A_Sk 158
F.4.2.3.1 RS16 layer to MS16 layer multiplexing and demultiplexing processes 158
F.4.2.4 RS16 layer to DCC layer adaptation functions: RS16/DCC_A_So and RS16/DCC_A_Sk 158
F.4.2.4.1 RS16 layer to DCC layer multiplexing and demultiplexing processes 158
F.4.2.5 RS16 layer to P0s layer adaptation functions: RS16/P0s_A_So-N and RS16/P0s_A_Sk-N 159
F.4.2.5.1 RS16 layer to P0s layer multiplexing and demultiplexing processes 159
F.4.2.5.2 RS16 layer to P0s layer frequency justification and bitrate adaptation processes 159
F.4.2.6 RS16 layer to V0x layer adaptation functions: RS16/V0x_A_So and RS16/V0x_A_Sk 160
F.4.2.6.1 RS16 layer to V0x layer multiplexing and demultiplexing processes 160
F.4.3 Defect, fault and performance monitoring 161
F.4.3.1 Trail termination point mode management 161
F.4.3.2 Defect detection and clearance criteria 161
F.4.3.3 Consequent action activation and clearance criteria 162
F.4.3.4 Defect correlation 163
Annex G (normative): ICS proforma for STM-16 multiplex section layer 164
G.1 Identification of the implementation 164
G.1.1 Date of the statement 164
G.1.2 Implementation Under Test (IUT) identification 164
G.1.3 System Under Test (SUT) identification 164
G.1.4 Product supplier 165
G.1.5 Client 165
G.1.6 ICS contact person 166
G.2 Identification of the EN 166
G.3 Global statement of conformance of STM-16 Multiplex Section (MS16) layer 166
G.4 MS16 Section Layer function 167
G.4.1 MS16 layer description 167
G.4.2 MS16 layer transmission tables 171
G.4.2.1 MS16 connection function: MS16_C 171
G.4.2.2 MS16 layer trail termination functions: MS16_TT_So and MS16_TT_Sk 172
G.4.2.2.1 In service error monitoring process 172
G.4.2.2.2 Server layer status monitoring process 173
G.4.2.2.2.1 MS16 Alarm Indication Signal (MS16 AIS) 173
G.4.2.2.3 Remote indicators monitoring process 173
G.4.2.2.3.1 MS16 Remote Defect Indication (RDI) (MS16 RDI) 173
G.4.2.2.3.2 MS16 Remote Error Indication (REI) (MS16 REI) 174
G.4.2.3 MS16 layer to S4 layer adaptation functions: MS16/S4_A_So and MS16/S4_A_Sk 175
G.4.2.3.1 MS16 layer to S4 layer frequency justification and bitrate adaptation processes 177
G.4.2.3.2 MS16 layer to S4 layer alignment process 177
G.4.2.3.2.1 AU pointer generation 179
G.4.2.3.2.2 AU pointer interpretation 182

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SIST EN 300 417-3-2 V1.1.3:2003
https://standards.iteh.ai/catalog/standards/sist/99b601c9-794e-4e2d-94c1-f3671ed74cb/sist-en-300-417-3-2-v1-1-3-2003

SIST EN 300 417-3-2 V1.1.3:2003

G.4.2.3.3 MS16 layer to S4 layer multiplexing and demultiplexing processes 187
G.4.2.4 MS16 layer to S4-4c layer adaptation functions: MS16/S4-4c_A_So and MS16/S4-4c_A_Sk 187
G.4.2.4.1 MS16 layer to S4-4c layer frequency justification and bitrate adaptation processes 188
G.4.2.4.2 MS16 layer to S4-4c layer alignment process 188
G.4.2.4.2.1 Concatenation indicator recovery process 191
G.4.2.4.3 MS16 layer to S4-4c layer multiplexing and demultiplexing processes 193
G.4.2.5 MS16 layer to DCC layer adaptation functions: MS16/DCC_A_So and MS16/DCC_A_Sk 193
G.4.2.5.1 MS16 layer to DCC layer multiplexing and demultiplexing processes 193
G.4.2.6 STM-16 Multiplex section layer to P0s layer adaptation functions: MS16/P0s_A_So and MS16/P0s_A_Sk 194
G.4.2.6.1 MS16 layer to P0s layer frequency justification and bitrate adaptation processes 194
G.4.2.6.2 MS16 layer to P0s layer multiplexing and demultiplexing processes 194
G.4.3 MS16 linear trail protection transmission tables 195
G.4.3.1 MS16 linear trail protection connection functions: MS16P1+1_C and MS16P1:n_C 197
G.4.3.2 MS16 linear protection trail termination functions: MS16P_TT_So and MS16P_TT_Sk 198
G.4.3.3 MS16 linear trail protection adaptation functions: MS16/MS16P_A_So and MS16/MS16P_A_Sk 199
G.4.3.3.1 MS16 layer to MS16 protection layer multiplexing and demultiplexing processes 199
G.4.3.4 MS16 linear trail protection processes 199
G.4.3.4.1 Automatic Protection Switching (APS) externally initiated commands 199
G.4.3.4.2 Automatic Protection Switching (APS) automatically initiated commands 200
G.4.3.4.3 Automatic Protection Switching (APS) generalities 202
G.4.3.4.4 Automatic Protection Switching (APS) switch performance 202
G.4.3.4.5 Automatic Protection Switching (APS) subprocesses 202
G.4.3.4.6 Automatic Protection Switching (APS) signal generation 204
G.4.3.4.7 Automatic Protection Switching (APS) signal interpretation 205
G.4.3.4.8 Automatic Protection Switching (APS) status report 206
G.4.4 MS16 two-fibre shared protection ring transmission tables 206
G.4.4.1 MS16 two-fibre shared protection ring connection functions: MS16P2fsh_C 208
G.4.4.2 MS16 two-fibre Shared Protection Ring trail termination functions: MS16P2fsh_TT_So and MS16P2fsh_TT_Sk 209
G.4.4.3 MS16 to MS16 two-fibre Shared Protection Ring adaptation functions: MS16/MS16P2fsh_A_So and MS16/MS16P2fsh_A_Sk 210
G.4.3.3.1 MS16 to MS16 two-fibre Shared Protection Ring multiplexing and demultiplexing processes 210
G.4.4.4 MS16 two-fibre shared protection ring processes 211
G.4.4.4.1 Automatic Protection Switching (APS) externally initiated commands 211
G.4.4.4.2 Automatic Protection Switching (APS) automatically initiated commands 212
G.4.4.4.3 Ring node Automatic Protection Switching (APS) generalities 213
G.4.4.4.4 Ring node Automatic Protection Switching (APS) states 213
G.4.4.4.5 Ring node Automatic Protection Switching (APS) state transitions 216
G.4.5 MS16 layer defect, fault and performance monitoring tables 221
G.4.5.1 Port status management 221
G.4.5.2 Defect detection and clearance criteria 221
G.4.5.3 Consequent action activation and clearance criteria 224
G.4.5.4 Defect correlation 227
G.4.5.5 Performance monitoring 228
G.4.5.5.1 Near end performance monitoring 228
G.4.5.5.2 Far end performance monitoring 228
G.4.5.5.3 Pointer performance monitoring 229
G.4.6 MS16 linear trail protection defect, fault and performance monitoring tables 229
G.4.6.1 Defect detection and clearance criteria 229
G.4.6.2 Consequent action activation and clearance criteria 231
G.4.6.3 Defect correlation 232
G.4.6.4 Performance monitoring 233
G.4.7 MS16 two-fibre shared protection ring defect, fault and performance monitoring tables 233
G.4.7.1 Defect detection and clearance criteria 233
G.4.7.2 Consequent action activation and clearance criteria 233
G.4.7.3 Defect correlation 235
G.4.7.4 Performance monitoring 235

History 236

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 300 417-3-2 V1.1.3:2003
https://standards.iteh.ai/catalog/standards/sist/99b601c9-794e-4e2d-94e1-f5071ed74eb/sist-en-300-417-3-2-v1-1-3-2003

SIST EN 300 417-3-2 V1.1.3:2003

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Transmission and Multiplexing (TM).

The present document is one of a family of documents that has been produced in order to provide inter-vendor and inter-operator compatibility of Synchronous Digital Hierarchy (SDH) equipment.

The present document is part 3-2 of a multi-part EN covering the Generic requirements of transport functionality of equipment, as identified below:

Part 1-1: "Generic processes and performance".

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Part 1-2: "General information about Implementation Conformance Statement (ICS) proforma".

Part 1-3: "Generic processes and performance; Abstract Test Suite (ATS)".

Part 2-1: "Synchronous Digital Hierarchy (SDH) and Plesiochronous Digital Hierarchy (PDH) physical section layer functions".

SIST EN 300 417-3-2 V1.1.3:2003
https://standards.iteh.ai/catalog/standards/sist/99b601c9-794e-4e2d-94c1-f53671ed74cb/sist-en-300-417-3-2-v1.1.3-2003

Part 2-2: "Synchronous Digital Hierarchy (SDH) and Plesiochronous Digital Hierarchy (PDH) physical section layer functions; Implementation Conformance Statement (ICS) proforma specification".

Part 2-3: "Synchronous Digital Hierarchy (SDH) and Plesiochronous Digital Hierarchy (PDH) physical section layer functions; Abstract Test Suite (ATS)".

Part 3-1: "Synchronous Transport Module-N (STM-N) regenerator and multiplex section layer functions".

Part 3-2: "Synchronous Transport Module-N (STM-N) regenerator and multiplex section layer functions; Implementation Conformance Statement (ICS) proforma specification".

Part 3-3: "Synchronous Transport Module-N (STM-N) regenerator and multiplex section layer functions; Abstract Test Suite (ATS)".

Part 4-1: "Synchronous Digital Hierarchy (SDH) path layer functions".

Part 4-2: "Synchronous Digital Hierarchy (SDH) path layer functions; Implementation Conformance Statement (ICS) proforma specification".

Part 4-3: "Synchronous Digital Hierarchy (SDH) path layer functions; Abstract Test Suite (ATS)".

Part 5-1: "Plesiochronous Digital Hierarchy (PDH) path layer functions".

Part 5-2: "Plesiochronous Digital Hierarchy (PDH) path layer functions; Implementation Conformance Statement (ICS) proforma specification".

Part 5-3: "Plesiochronous Digital Hierarchy (PDH) path layer functions; Abstract Test Suite (ATS)".

Part 6-1: "Synchronization layer functions".

SIST EN 300 417-3-2 V1.1.3:2003

Part 6-2: "Synchronization layer functions; Implementation Conformance Statement (ICS) proforma specification".

Part 6-3: "Synchronization layer functions; Abstract Test Suite (ATS)".

Part 7-1: "Auxiliary layer functions".

Part 7-2: "Auxiliary layer functions; Implementation Conformance Statement (ICS) proforma specification".

Part 7-3: "Auxiliary layer functions; Abstract Test Suite (ATS)".

Parts 2 to 7 specify the layers and their atomic functions.

NOTE 1: The present document does not currently address configuration management.

NOTE 2: The SDH radio equipment functional blocks are addressed by ETSI WG TM4.

Various of the above parts have previously been published as parts of EN 300 417.

They have been converted to parts of EN 300 417 without technical changes, but some editorial changes have been necessary (e.g. references). In particular:

- Parts 2-1 and 3-2 have been modified to take account of editorial errors present in edition 1.
- Part 1-1 has had its title change of to align with other parts published at a later date.

Also note that in the meantime parts 8-1, 8-2 and 8-3 have been stopped.

National transposition dates	
Date of adoption of this EN:	24 October 1997
Date of latest announcement of this EN (doa):	28 February 1998
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 August 1998
Date of withdrawal of any conflicting National Standard (dow):	31 August 1998

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(standards.iteh.ai)
SIST EN 300 417-3-2 V1.1.3:2003
https://standards.iteh.ai/catalog/standards/sist/99b601c9-794e-4c2d-94c1-f53671ed74cb/sist-en-300-417-3-2-v1-1-3-2003

Introduction

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented for a telecommunication specification. Such a statement is called an Implementation Conformance Statement (ICS).

A client of a test laboratory who requests a conformance / approval test shall provide to the test laboratory a completed ICS proforma for each layer to be tested and a detailed system description of the implementation.

The ICS proforma is not another complete description of the related specification, but rather a compact form of its static conformance requirements, to be used by the test laboratory to identify which test shall be performed on a given implementation. Not every feature of a profile specification is contained in the related ICS proforma. For particular cases requiring specific information the ICS can refer to the appropriate clause of the related specification by means of references, notes and or comments.

The ICS proforma captures the implementation flexibility allowed by the related specification and details which option are left to the implementor, which are conditionally dependent on other option taken by the implementor.

SIST EN 300 417-3-2 V1.1.3:2003

1 Scope

The present document provides the Implementation Conformance Statement (ICS) proforma specification for the Synchronous Transport Module-1 (STM-1), STM-4 and STM-16 regenerator section and multiplex section layer functions defined in EN 300 417-3-1 [2] in compliance with the relevant requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-7 [7] and ETS 300 406 [3].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

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SIST EN 300 417-3-2 V1.1.3:2003

[1] EN 300 417-1-1: "Transmission and Multiplexing (TM); Generic requirements of transport functionality of equipment; Part 1-1: Generic processes and performance".

[2] EN 300 417-3-1: "Transmission and Multiplexing (TM); Generic requirements of transport functionality of equipment; Part 3-1: Synchronous Transport Module-N (STM-N) regenerator and multiplex section layer functions".

[3] ETS 300 406 (1995): "Methods for testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

[4] ETS 300 232: "Transmission and Multiplexing (TM); Optical interfaces for equipments and systems relating to the Synchronous Digital Hierarchy [ITU-T Recommendation G.957 (1993) modified]".

[5] ITU-T Recommendation G.957 (1995): "Optical interfaces for equipments and systems relating to the synchronous digital hierarchy".

[6] ISO/IEC 9646-1 (1994): "Information technology; Open systems interconnection; Conformance testing methodology and framework; Part 1: General concepts".

[7] ISO/IEC 9646-7 (1995): "Information technology; Open systems interconnection; Conformance testing methodology and framework; Part 7: Implementation Conformance Statements".

[8] ETS 300 147 (1992): "Transmission and Multiplexing (TM); Synchronous Digital Hierarchy (SDH); Multiplexing structure".

[9] CCITT Recommendation G.704 (1991): "Synchronous frame structures used at primary and secondary hierarchical levels".

[10] CCITT Recommendation G.751 (1988): "Digital multiplex equipments operating at third order bit rate of 34 368 kbit/s and fourth order bit rate of 139 264 kbit/s and using positive justification".

[11] ITU-T Recommendation G.823 (1993): "The control of jitter and wander within digital networks which are based on the 2 048 kbit/s hierarchy".

[12] ITU-T Recommendation G.825 (1993): "The control of jitter and wander within digital networks which are based on the synchronous digital hierarchy (SDH)".

SIST EN 300 417-3-2 V1.1.3:2003

[13] ITU-T Recommendation G.826 (1993): "Error performance parameters and objectives for international, constant bit rate digital paths at or above the primary rate".

[14] ITU-T Recommendation G.707 (1996): "Network node interface for the Synchronous Digital Hierarchy (SDH)".

[15] ETS 300 746 (1997): "Transmission and Multiplexing (TM); Synchronous Digital Hierarchy (SDH); Network protection schemes; Automatic Protection Switch (APS) protocols and operation".

[16] TS 101 009: "Transmission and Multiplexing (TM); Synchronous Digital Hierarchy (SDH); Network Protection schemes; Types and characteristics".

[17] EN 300 417-2-2: "Transmission and Multiplexing (TM); Generic requirements of transport functionality of equipment; Part 2-2: Synchronous Digital Hierarchy (SDH) and Plesiochronous Digital Hierarchy (PDH) physical section layer functions; Implementation Conformance Statement (ICS) proforma specification".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

- terms defined in EN 300 417-3-1 [2];
- terms defined in ISO/IEC 9646-1 [6] and in ISO/IEC 9646-7 [7].

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In particular, the following terms defined in ISO/IEC 9646-1 [6] apply:

SIST EN 300 417-3-2 V1.1.3:2003
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Implementation Conformance Statement (ICS): a statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented. The ICS can take several forms: protocol ICS, profile ICS, profile specific ICS, information object ICS, etc.

ICS proforma: a document, in the form of a questionnaire, which when completed for an implementation or system becomes an ICS.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

A	Adaptation function
AcTI	Accepted Trace Identifier
ADM	Add-Drop Multiplexer
AI	Adapted Information
AIS	Alarm Indication Signal
AP	Access Point
APId	Access Point Identifier
APS	Automatic Protection Switch
AU	Administrative Unit
AUG	Administrative Unit Group
AU-n	Administrative Unit, level n
BER	Bit Error Rate
BIP	Bit Interleaved Parity
BIP-N	Bit Interleaved Parity, width N
C	Connection function
CI	Characteristic Information
CK	Clock
CM	Connection Matrix

SIST EN 300 417-3-2 V1.1.3:2003

CP	Connection Point
CS	Clock Source
D	Data
DCC	Data Communications Channel
DEC	DECrement
DEG	DEGraded
DEGTHR	DEGraded THReshold
EBC	Errored Block Count
ECC	Embedded Communications Channel
ECC(x)	Embedded Communications Channel, layer x
EDC	Error Detection Code
EDCV	EDC Violation
EMF	Equipment Management Function (EMF)
EQ	EQuipment
ERSN	External Request Signal Number
ERT	External Request Type
ES	Electrical Section
ES	Errored Second
ExTI	Expected Trace Identifier
F_B	Far-end Block
FAS	Frame Alignment Signal
FOP	Failure Of Protocol
FS	Frame Start signal
GRSN	Global Request Signal Number
GRT	Global Request Type
HO	Higher Order
HOVC	Higher Order Virtual Container
HP	Higher order Path
ICS	Implementation Conformance Statement
ID	IDentifier
IF	In Frame state
INC	INCrement
IUT	Implementation Under Test
LBSN	Local Bridge Signal Number
LC	Link Connection
LO	Lower Order
LOA	Loss Of Alignment; generic for LOF, LOM, LOP
LOF	Loss Of Frame
LOP	Loss Of Pointer
LOS	Loss Of Signal
LOVC	Lower Order Virtual Container
LRSN	Local Request Signal Number
LRT	Local Request Type
LSSN	Local Selector Signal Number
MC	Matrix Connection
MCF	Message Communications Function
MDT	Mean Down Time
mei	maintenance event information
MI	Management Information
MO	Managed Object
MON	Monitored
MP	Management Point
MS	Multiplex Section
MS1	STM-1 Multiplex Section
MS16	STM-16 Multiplex Section
MS4	STM-4 Multiplex Section
MSB	Most Significant Bit
MSOH	Multiplex Section OverHead
MSP	Multiplex Section Protection
MSPG	Multiplex Section Protection Group

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SIST EN 300 417-3-2 V1.1.3:2003
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