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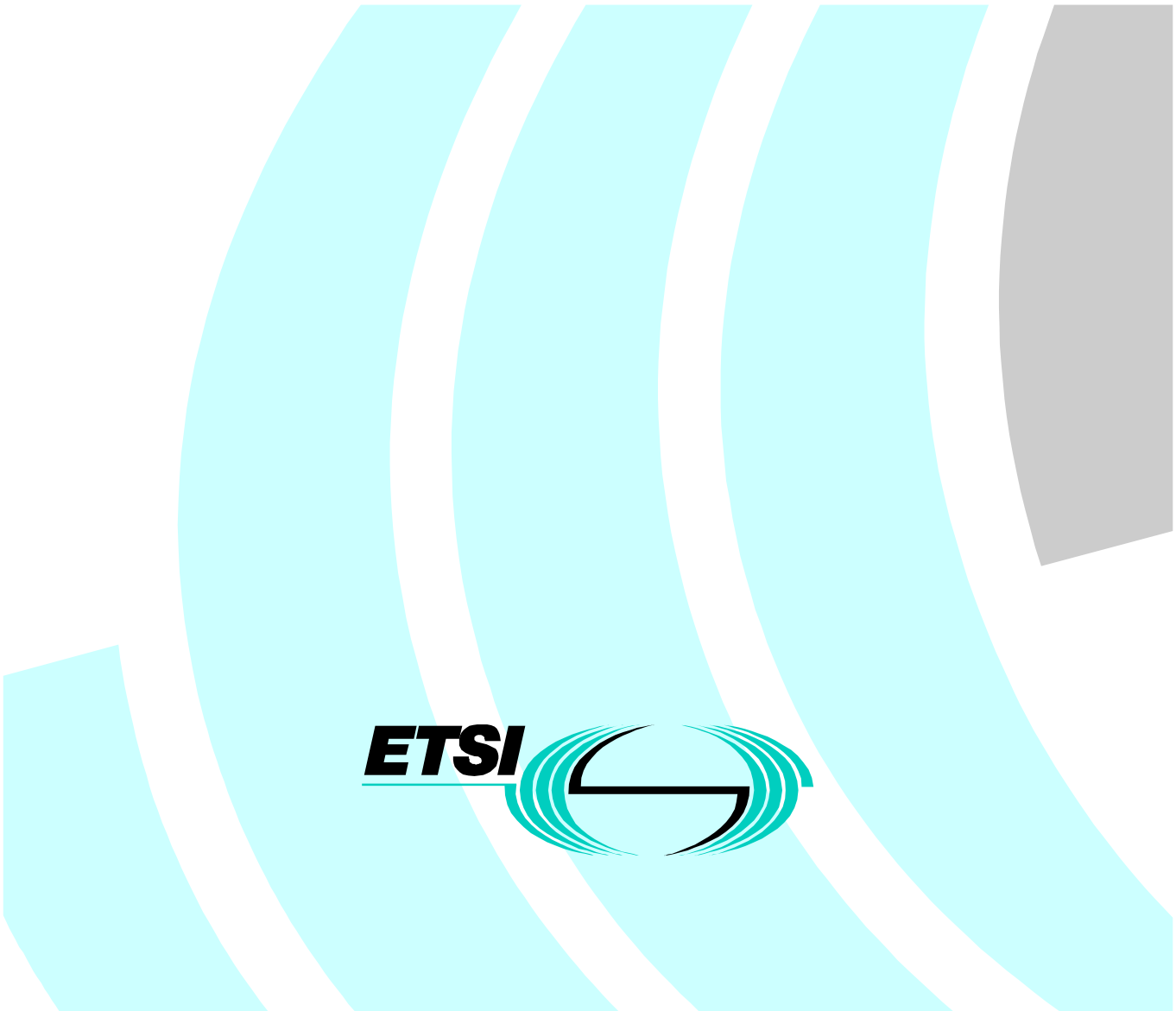
European Standard (Telecommunications series)

Transmission and Multiplexing (TM); Generic requirements of transport functionality of equipment; Part 6-2: Synchronization layer functions; Implementation Conformance Statement (ICS) proforma specification



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Contents

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Transmission and Multiplexing (TM), and is now submitted for the Voting phase of the ETSI standards Two-step Approval Procedure.

The present document has been produced in order to provide the Implementation Conformance Statement (ICS) proforma to be used in connection with conformance/approval testing of SDH equipment. It is one of a family of ENs covering various aspects of SDH equipment standards.

The ICS proforma consists of 8 parts, numbered 1-2 to 8-2 each of them corresponding to the 8 parts of EN 300 417, numbered 1-1 to 8-1.

The present document is part 6-2 of a multi-part EN covering the generic requirements of transport functionality of equipment, as identified below:

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

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

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

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

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; Implementaion Conformance Statement (ICS) proforma specification";

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 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 6-1: "Synchronization layer functions";

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

Part 7-1: "Equipment management and Auxiliary layer functions";

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

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

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

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

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

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

Also note that in the meantime parts 8-1 and 8-2 together will all parts x-3 (Abstract Test Suites) have been stopped.

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

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.

The ICS items in the present document are developed following an atomic-function basis, which means reporting the requirements atomic function per atomic function.

The ICS tables are organized in subclauses following the subclauses structure of the relevant base specification.

1 Scope

The present document provides the Implementation Conformance Statement (ICS) proforma for the SDH Path layer functions defined in EN 300 417-6-1 [1] in compliance with the relevant requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-7 [5] 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.

[1] ETSI EN 300 417-6-1: "Transmission and Multiplexing (TM); Generic requirements of transport functionality of equipment; Part 6-1: Synchronization layer functions".

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

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

[4] ISO/IEC 9646-1 (1994): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".

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

[6] ETSI EN 300 462-1-1: "Transmission and Multiplexing (TM); Generic requirements for synchronization networks; Part 1: Definitions and terminology for synchronization networks".

[7] ETSI EN 300 462-2-1: "Transmission and Multiplexing (TM); Generic requirements for synchronization networks; Part 2: Synchronization network architecture".

[8] ETSI EN 300 462-5-1: "Transmission and Multiplexing (TM); Generic requirements for synchronization networks; Part 5: Timing characteristics of slave clocks suitable for operation in Synchronous Digital Hierarchy (SDH) equipment".

[9] ETSI ETS 300 337: "Transmission and Multiplexing (TM); Generic frame structures for the transport of various signals (including Asynchronous Transfer Mode (ATM) cells and Synchronous Digital Hierarchy (SDH) elements) at the ITU-T Recommendation G.702 hierarchical rates of 2 048 kbit/s, 34 368 kbit/s and 139 264 kbit/s".

[10] ETSI ETS 300 166: "Transmission and Multiplexing (TM); Physical and electrical characteristics of hierarchical digital interfaces for equipment using the 2 048 kbit/s - based plesiochronous or synchronous digital hierarchies".

[11] ETSI ETS 300 167: "Transmission and Multiplexing (TM); Functional characteristics of 2 048 kbit/s interfaces".

[12] ETSI EN 300 417-2-1: "Transmission and Multiplexing (TM); Generic requirements of transport functionality of equipment; Part 2-1: Synchronous Digital Hierarchy (SDH) and Plesiochronous Digital Hierarchy (PDH) physical section layer functions".

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

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 300 417-6-1 [1], ISO/IEC 9646-1 [4], and in ISO/IEC 9646-7 [5] apply.

In particular, the following terms and definitions given in ISO/IEC 9646-1 [4] apply:

Implementation Conformance Statement (ICS): 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: 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:

AI	Adaptation Information
AIS	Alarm Indication Signal
AP	Access Point
CI	Characteristic Information
CK	timing information - Clock signal
CLR	Clear
CP	Connection Point
CS	timing information - Clock Source
CSid	Clock Source identifier
DNU	Do Not Use
ES1	STM-1 Electrical Section layer
EXTCMD	External Command
FS	timing information - Frame Start
FSw	Forced Switch
HO	Hold Over mode
HO	Hold Off time
ID	IDentifier
INVx	INValid x
LC	Layer Clock
LO	Lock Out
LO	Locked mode
LOS	Loss Of Signal
LSB	Least Significant Bit
LTI	Loss of Timing Information
MA	Maintenance and Adaptation
MI	Management Information
MON	MONitored
MFP	MultiFrame Present
MFS	MultiFrame Start
MS	Multiplex Section
MSB	Most Significant Bit

MSw	Manual Switch
MTIE	Maximum Time Interval Error
NE	Network Element
n/a	non applicable
NS	Network Synchronization
NSUPP	Not supported
OSn	STM-N Optical Section layer
P12s	2 048 kbit/s PDH path layer with synchronous 125 ms frame structure according to ETS 300 167 [11]
P31s	34 368 kbit/s PDH path layer with synchronous 125 ms frame structure according to ETS 300 337 [9]
P4s	139 264 kbit/s PDH path layer with synchronous 125 ms frame structure according to ETS 300 337 [9]
PDH	Plesiochronous Digital Hierarchy
PRC	Primary Reference Clock
QL	Quality Level
RI	Remote Information
RSn	STM-N Regenerator Section layer
SASE	Stand Alone Synchronization Equipment
SD	Synchronization Distribution
SDH	Synchronous Digital Hierarchy
SDL	Specification and Description Language
SEC	SDH Equipment Clock
SF	Signal Fail
SQLCH	Squelch
SSF	Server Signal Fail
SSM	Synchronization Status Message
SSU	Synchronization Supply Unit
SSUL	Local SSU
SSUT	Transit SSU
STM-N	Synchronous Transport Module, level N
Sk	Sink
So	Source
tba	to be attributed
TCP	Termination Connection Point
TDEV	Time DEViation
TI	Timing Information
TL	Transport Layer
TM	Timing Marker
TT	Trail Termination
TSF	Trail Signal Fail
UNC	UNConnected
VC-n	Virtual Container, level n
WTR	Wait to Restore

4 Conformance to this ICS proforma specification

If it claims to conform to the present document, the actual ICS proforma to be filled in by a supplier shall be technically equivalent to the text of the ICS proforma given in the annexes of the present document, and shall preserve the numbering/naming and ordering of the proforma items.

An ICS which conforms to the present document shall be a conforming ICS proforma completed in accordance with the instructions for completion given in clause A.1.

For each layer instance, it's needed to fill a separate ICS Proforma depending on the layer instance.

Annex A (normative): ICS proforma for EN 300 417-6-1

A.1 Guidance for completing the ICS proforma

A.1.1 Purposes and structure

The purpose of this ICS proforma is to provide a mechanism whereby a supplier of an implementation of the requirements defined in EN 300 417-6-1 [1] may provide information about the implementation in a standardized manner.

The ICS proforma is subdivided into subclauses for the following categories of information:

- instructions for completing the ICS proforma;
- identification of the implementation;
- identification of the EN;
- global statement of conformance.

A.1.2 Abbreviations and conventions

The ICS proforma contained in this annex is comprised of information in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7 [5].

Item column

The item column contains a number which identifies the item in the table.

Item description column

The item description column describes in free text each respective item (e.g. parameters, timers, etc.). It implicitly means "is <item description> supported by the implementation?".

Status column

The following notations, defined in ISO/IEC 9646-7 [5], are used for the status column:

m	mandatory - the capability is required to be supported;
o	optional - the capability may be supported or not;
n/a	not applicable - in the given context, it is impossible to use the capability;
x	prohibited (excluded) - there is a requirement not to use this capability in the given context;
o.i	qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logical of their selection which is defined immediately following the table;

ci conditional - the requirement on the capability ("m", "o", "x" or "n/a") depends on the support of other optional or conditional items. "i" is an integer identifying an unique conditional status expression which is defined immediately following the table. For nested conditional expressions, the syntax "IF ... THEN (IF ... THEN ... ELSE...) ELSE ..." shall be used to avoid ambiguities.

Reference column

The reference column gives reference to EN 300 417-6-1 [1], except where explicitly stated otherwise.

Support column

The support column shall be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646-7 [5], are used for the support column:

Y or y supported by the implementation;

N or n not supported by the implementation;

N/A, n/a or - no answer required (allowed only if the status is n/a, directly or after evaluation of a conditional status).

If this ICS proforma is completed in order to describe a multiple-profile support in a system, it is necessary to be able to answer that a capability is supported for one profile and not supported for another. In that case, the supplier shall enter the unique reference to a conditional expression, preceded by "?" (e.g. ?3). This expression shall be given in the cell provided at the bottom of the table. It uses predicates defined in the SCS, each of which refers to a single profile and which takes the value TRUE if and only if that profile is to be used.

EXAMPLE 1: ?3: IF prof1 THEN Y ELSE N

It is also possible to provide a comment to an answer in the space provided at the bottom of the table.

Values allowed column

The values allowed column contains the values or the ranges of values allowed.

Values supported column

The values supported column shall be filled in by the supplier of the implementation. In this column, the values or the ranges of values supported by the implementation shall be indicated.

Mnemonic column

The Mnemonic column contains mnemonic identifiers for each item.

References to items

For each possible item answer (answer in the support column) within the ICS proforma exists a unique reference, used, for example, in the conditional expressions. It is defined as the table identifier, followed by a solidus character "/", followed by the item number in the table. If there is more than one support column in a table, the columns shall be discriminated by letters (a, b, etc.), respectively.

EXAMPLE 2: C.5/4 is the reference to the answer of item 4 in table C.5.

EXAMPLE 3: C.6/3b is the reference to the second answer (i.e. in the second support column) of item 3b in table C.6.

Prerequisite line

A prerequisite line takes the form: Prerequisite: <predicate>.

A prerequisite line after a clause or table title indicates that the whole clause or the whole table is not required to be completed if the predicate is FALSE.

A.1.3 Instructions for completing the ICS proforma

The supplier of the implementation shall complete the ICS proforma in each of the spaces provided. However, the tables containing in "user role" subclause shall only be completed for user implementations, and the tables containing in "network role" subclause shall only be completed for network implementations. If necessary, the supplier may provide additional comments separately.

More detailed instructions are given at the beginning of the different subclauses of the ICS proforma.

Annex B (normative): ICS proforma for SD (Synchronization Distribution) Layer

B.1 Identification of the implementation

In the present document, an IUT, and of course the identification of an IUT refers to a SD Layer instance implemented inside the SUT.

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should be filled in so as to provide as much detail as possible regarding version numbers and configuration options.

The product supplier information and client information should both be filled in if they are different.

A person who can answer queries regarding information supplied in the ICS should be named as the contact person.

B.1.1 Date of the statement

.....

B.1.2 Implementation Under Test (IUT) identification

IUT name:

.....

.....

IUT version

Hardware version:

.....

.....

Software version:

.....

.....

Firmware version:

.....

.....

B.1.3 System Under Test (SUT) identification

SUT name:

.....

.....

Hardware configuration:

.....

.....

SUT Software version:

.....

.....

SUT Firmware version:

.....

Operating system:

.....

.....

B.1.4 Product supplier

Name:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

.....

B.1.5 Client

Name:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

.....

B.1.6 ICS contact person

Name:

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

B.2 Identification of the EN

This ICS proforma applies to the following document:

EN 300 417-6-1 [1]: "Transmission and Multiplexing (TM); Generic requirements of transport functionality of equipment; Part 6-1: Synchronization layer functions".

B.3 Global statement of conformance of SD Layer

Are all mandatory capabilities implemented (Yes/No) .....

NOTE: Answering "No" to this question indicates non-conformance to the EN specification. Non-supported mandatory capabilities are to be identified in the ICS, with an explanation of why the implementation is non-conforming, on pages attached to the ICS proforma.

Answering "Yes" to this question indicates only that all the capabilities with the explicit status "m" are supported. It is not necessary to fill in the support column of the associated items.

B.4 SD Layer Functions

B.4.0 SD Layer Description

Table B.1: SD Layer functions

Item	SD Layer functions	Reference	Status	Support
1	SD Connection function (SD_C)	5, figure 16	o	
2	SD Layer Trail Termination Source function (SD_TT_So)	5, figure 16	m	
3	SD Layer Trail Termination Sink function (SD_TT_Sk)	5, figure 16	m	
4	SD layer to NS layer SEC quality adaptation source function (SD/NS-SEC_A_So)	5, figure 16	c101	
5	SD layer to NS layer SEC quality adaptation sink function (SD/NS-SEC_A_Sk)	5, figure 16	c102	
6	SD layer to NS layer SSU quality adaptation source function (SD/NS-SSU_A_So)	5, figure 16	c101	
7	SD layer to NS layer SSU quality adaptation sink source function (SD/NS-SSU_A_Sk)	5, figure 16	c102	
8	SD layer to NS layer PRC quality adaptation source function (SD/NS-PRC_A_So)	5, figure 16	c101	
9	SD layer to NS layer adaptation source function (SD/NS_A_So)	5, figure 16	c101	

o.101: It is mandatory to support at least one of these items -- At least one adaptation source function present.

o.102: It is mandatory to support at least one of these items -- At least one adaptation sink function present.

c101: IF B.1/2 THEN o.101 ELSE x -- a TT_So function should exist for A_So function.

c102: IF B.1/3 THEN o.102 ELSE x -- a TT_Sk function should exist for A_Sk function.

B.4.0.1 Characteristic Information

Table B.2: SD Characteristic Information

Prerequisite: B.1/2 OR B.1/3 -- implies that at least one SD Layer Trail Termination is present.

Item	SD Characteristic Information	Reference	Status	Support
1	The Characteristic Information (CI) at this point is a timing information - Clock signal (CK) with associated server SF, QL and CSid	5	m	

B.4.0.2 Adapted information

Table B.3: SD Adapted Information

Prerequisite: B.1/2 OR B.1/3 -- implies that at least one SD Layer Trail Termination function is present.

Item	SD Adapted Information	Reference	Status	Support
1	The Adaptation Information (AI) at this point is a timing information – Clock signal (CK) with associated trail SF, QL and CSid	5	m	

B.4.1 SD Connection function

Prerequisite: B.1/1 -- a connection function exists.

B.4.1.1 Management information (SD_C)

Table B.4: Configuration/provisioning of information from EMF to SD_C

Item	Configuration/provisioning of information from EMF to SD_C	Reference	Status	Support
1	SD_C_MI_ConnectionPortIds is provisionable from the EMF for each input output CP	5.1	m	

B.4.1.2 Processes (SD_C)

Table B.5: Generic processes (SD_C)

Item	Generic processes (SD_C)	Reference	Status	Support
1	SD Connection function (SD_C) in the source direction performs the selection of sources for station clock output(s)	5.1, 4.6	o.501	
2	SD Connection function (SD_C) in the sink direction performs the preselection of station clock interface(s) and/or traffic interfaces as possible synchronization sources	5.1, 4.6	o.501	

o.501: It is mandatory to support at least one of these items -- a connection function should perform at least one these two processes.

Table B.6: Routing

Item	Routing	Reference	Status	Support
1	The function is able to connect a specific input with a specific output by means of establishing a matrix connection between the specified input and output	5.1	m	
2	The function is able to remove an established matrix connection	5.1	m	

Table B.7: Unconnected SD signal generation

Item	Unconnected SD signal generation	Reference	Status	Support
1	The function generates an unconnected SD signal, specified as: SSF true, CS value None, QL value QL-UNC and undefined clock	5.1	m	

B.4.1.3 Consequent actions (SD_C)

Table B.8: Consequent actions for SD_C

Item	Consequent actions for SD_C	Reference	Status	Support
1	If an output of this function is not connected to one of its inputs, the function connects the unconnected SD signal to the output	5.1	m	

B.4.2 SD Trail Termination functions

B.4.2.1 SD Trail Termination Source function SD_TT_So

Prerequisite: B.1/2 -- SD_TT_So function exists.

B.4.2.1.1 Processes (SD_TT_So)

Table B.9: Processes (SD_TT_So)

Item	Processes (SD_TT_So)	Reference	Status	Support
1	Output SD_CI_CK is derived from and locked to SD_AI_CK	5.2.1	m	

B.4.2.1.2 Consequent actions (SD_TT_So)

Table B.10: Defect Correlation (SD_TT_So)

Item	Defect Correlation (SD_TT_So)	Reference	Status	Support
1	The function implements the following logical equation: aSSF <-- AI_TSF	5.2.1	m	

B.4.2.2 SD trail Termination Sink function SD_TT_Sk

Prerequisite: B.1/3 -- SD_TT_Sk function exists.

B.4.2.2.1 Management information (SD_TT_Sk)

Table B.11: Configuration/provisioning of information from EMF to SD_TT_Sk

Item	Configuration/provisioning of information from EMF to SD_TT_Sk	Reference	Status	Support
1	SD_TT_Sk_MI_SSF_Reported is provisionable from the EMF	5.2.2	m	
2	SD_TT_Sk_MI_TPmode is provisionable from the EMF	5.2.2, EN 300 417-1-1 [2] clause 8.5	m	
3	SD_TT_Sk_MI_QLmode is provisionable from the EMF	5.2.2	m	
4	SD_TT_Sk_MI_QLfixedValue is provisionable from the EMF	5.2.2	m	
5	SD_TT_Sk_MI_QLoverwrite is provisionable from the EMF	5.2.2	m	

Table B.12: Signal reports from SD_TT_Sk to EMF

Item	Signal reports from SD_TT_Sk to EMF	Reference	Status	Support
1	SD_TT_Sk_MI_cSSF is reported to the EMF	5.2.2	m	
2	SD_TT_Sk_MI_QL is reported to the EMF	5.2.2	m	

B.4.2.2.2 Processes (SD_TT_Sk)

Table B.13: Trail Termination Point mode process

Prerequisite: B.11/2 -- MI_TPmode provisionable from the EMF.

Item	Trail Termination Point mode process	Reference	Status	Support
1	The Trail Termination Point Mode supports "not monitored" (NMON) status	EN 300 417-1-1 [2], subclause 8.5	m	
2	The Trail Termination Point Mode supports "monitored" (MON) status	EN 300 417-1-1 [2], subclause 8.5	m	

Table B.14: Processes performed by SD_TT_Sk

Item	Processes performed by SD_TT_Sk	Reference	Status	Support
1	The function terminates a synchronization trail transmitted via one of the synchronization information's transport layers	5.2.2	m	
2	The function processes and reports the incoming quality	5.2.2	m	
3	The function can operate in QL-enabled mode	5.2.2	m	
4	The function can operate in QL-disabled mode	5.2.2	m	
5	The mode is provisionable via MI_QLmode	5.2.2	c1401	
6	In QL-disabled mode the function reports the status of the trail (MI_cSSF)	5.2.2	c1402	
7	In QL-enabled mode the function reports the status of the trail (MI_cSSF) and the incoming quality level value (CI_QL) via MI_QL	5.2.2	c1403	
8	In QL-enabled mode, AI_CS = CI_CS in pass-through and overwrite operations	5.2.2	c1403	
9	The function supports the ability to pass through or overwrite the incoming quality level information	5.2.2	m	
10	The selection between pass through and overwrite mode is controlled via MI_QLoverwrite	5.2.2	c1404	
11	The default value of MI_QLoverwrite is FALSE	5.2.2	c1404	
12	The default for MI_QLfixedValue is QL-DNU	5.2.2	c1405	
13	In Pass through mode, the quality level output (AI_QL) is related to the quality level input (CI_QL) signal	5.2.2	m	
14	In Overwrite mode, the quality level output (AI_QL) is a fixed value provisioned via MI_QLfixedValue	5.2.2	c1405	
15	The relation between the quality level input and output (CI_Qland AI_QL), the overwrite Mode and the CI_SSF values conforms to table 12	5.2.2, table 12	c1404	

c1401: IF (B.14/3 AND B.14/4 AND B.11/3) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c1402: IF B.14/3 THEN m ELSE n/a -- QL-enabled mode is supported.

c1403: IF B.14/4 THEN m ELSE n/a -- QL-disabled mode is supported.

c1404: IF B.11/5 THEN m ELSE n/a -- MI_QLoverwrite is supported.

c1405: IF B.11/4 THEN m ELSE n/a -- MI_QLfixedValue is supported.

B.4.2.2.3 Consequent Actions (SD_TT_Sk)

Table B.15: Consequent Actions (SD_TT_Sk)

Item	Consequent Actions (SD_TT_Sk)	Reference	Status	Support
1	The function implements the following logical equation: aTSF <--- CI_SSF	5.2.2	m	

B.4.2.2.4 Defect Correlation (SD_TT_Sk)

Table B.16: Defect Correlation (SD_TT_Sk)

Item	Defect Correlation (SD_TT_Sk)	Reference	Status	Support
1	The function implements the following logical equation: cSSF <--- MON and CI_SSF and SSF_Reported	5.2.2	m	

B.4.3 SD Adaptation functions

B.4.3.1 SD layer to NS layer SEC quality Adaptation Source function SD/NS-SEC_A_So

Prerequisite: B.1/4 -- SD layer to NS layer SEC quality Adaptation Source function exists.

B.4.3.1.1 Management information (SD/NS-SEC_A_So)

Table B.17: Configuration/provisioning from EMF to SD/NS-SEC_A_So

Item	Configuration/provisioning from EMF to SD/NS-SEC_A_So	Reference	Status	Support
1	SD/NS-SEC_A_So_MI_CkOperation is provisionable from the EMF	5.3.1	m	
2	SD/NS-SEC_A_So_MI_QLMode is provisionable from the EMF	5.3.1	m	

Table B.18: Signal reports from SD/NS-SEC_A_So to EMF

Item	Signal reports from SD/NS-SEC_A_So to EMF	Reference	Status	Support
1	SD/NS-SEC_A_So_MI_CkMode is reported to the EMF	5.3.1	m	
2	SD/NS-SEC_A_So_MI_cLTI is reported to the EMF	5.3.1	m	

B.4.3.1.2 Processes (SD/NS-SEC_A_So)

Table B.19: General processes (SD/NS-SEC_A_So)

Item	General processes (SD/NS-SEC_A_So)	Reference	Status	Support
1	The function generates a SEC type System clock as defined in EN 300 462–2-1 [7] and EN 300 462–5-1 [8]	5.3.1, EN 300 462-2-1 [7], EN 300 462-5-1 [8]	m	
2	The function can operate in QL-enabled mode	5.3.1	m	
3	The function can operate in QL-disabled mode	5.3.1	m	
4	The mode is provisionable via MI_QLmode	5.3.1	c1901	
5	The function supports forced free running operation working in the free run mode	5.3.1	m	
6	The function supports forced holdover operation, working in the holdover mode (HO)	5.3.1	m	
7	The function supports normal operation, working in the locked or holdover mode depending on the input signals	5.3.1	m	
8	The function supports auto selection operation	5.3.1	m	
9	The 3 types of operation are activated by user management input (MI_CkOperation)	5.3.1	c1902	
10	The modes defined in EN 300 462-1-1 [6](free running mode, holdover mode and locked mode) are automatically activated by the status of input signals	5.3.1, EN 300 462-1-1 [6]	m	
11	The types of operation conform to the state diagram given in figure 21	5.3.1, figure 21	c1902	

c1901: IF (B.19/2 AND B.19/3 AND B.17/2) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c1902: IF B.17/1 THEN m ELSE n/a -- MI_CkOperation supported.

Table B.20: Characteristics of clock for locked mode (SD/NS-SEC_A_So)

Prerequisite: B.19/7 -- Locked mode supported.

Item	Characteristics of clock for locked mode (SD/NS-SEC_A_So)	Reference	Status	Support
1	Bandwidth of generated clock in locked mode is compliant to EN 300 462–5-1 [8]	5.3.1, EN 300 462-5-1 [8] clause 8	m	
2	Transients of generated clock in locked mode are compliant to EN 300 462-5-1 [8]	5.3.1, EN 300 462-5-1 [8] clause 9.1, 9.3, 9.4	m	
3	Pull in of generated clock in locked mode is compliant to EN 300 462-5-1 [8]	5.3.1, EN 300 462-5-1 [8] clause 5	m	
4	Pull out of generated clock in locked mode is compliant to EN 300 462-5-1 [8]	5.3.1, EN 300 462-5-1 [8] clause 5	m	
5	Noise of generated clock in locked mode is compliant to EN 300 462–5-1 [8]	5.3.1, EN 300 462-5-1 [8] clause 6.1	m	
6	Input Jitter tolerance of generated clock in locked mode is compliant to EN 300 462-5-1 [8]	5.3.1, EN 300 462-5-1 [8] clause 7.1	m	
7	Output Jitter of generated clock in locked mode is compliant to EN 300 462-5-1 [8]	5.3.1, EN 300 462-5-1 [8] clause 6.3	m	

Table B.21: Characteristics of clock for holdover mode (SD/NS-SEC_A_So)

Prerequisite: B.19/7 -- Holdover mode supported.

Item	Characteristics of clock for holdover mode (SD/NS-SEC_A_So)	Reference	Status	Support
1	Holdover accuracy of generated clock in holdover mode is compliant to EN 300 462–5-1 [8]	5.3.1, EN 300 462-5-1 [8] clause 9.2	m	
2	Output phase deviation of generated clock in holdover mode is compliant to EN 300 462-5-1 [8]	5.3.1, EN 300 462-5-1 [8] clause 9.2	m	

Table B.22: Characteristics of clock for freerun mode (SD/NS-SEC_A_So)

Prerequisite: B.19/5 -- Freerun mode supported.

Item	Characteristics of clock for freerun mode (SD/NS-SEC_A_So)	Reference	Status	Support
1	Frequency accuracy of generated clock in freerun mode is compliant to EN 300 462-5-1 [8]	5.3.1, EN 300 462–5-1 [8] clause 4	m	
2	Transients of generated clock in freerun mode is compliant to EN 300 462-5-1 [8]	5.3.1, EN 300 462-5-1 [8] clause 9	m	
3	Noise of generated clock in freerun mode is compliant to EN 300 462-5-1 [8]	5.3.1, EN 300 462-5-1 [8] clause 6	m	
4	Output Jitter of generated clock in freerun mode conforms to EN 300 462-5-1 [8]	5.3.1, EN 300 462-5-1 [8], clause 6.3	m	

Table B.23: Forced free running operation (SD/NS-SEC_A_So)

Prerequisite: B.19/5 -- Forced freerun operation supported.

Item	Forced free running operation (SD/NS-SEC_A_So)	Reference	Status	Support
1	The outgoing clock (AI_Ck) is not defined by an incoming reference or stored incoming reference data in the holdover memory	5.3.1	m	
2	The hold-over memory is reset to a default value	5.3.1	m	
3	The outgoing QL of the free running mode is QL-SEC	5.3.1	m	
4	The outgoing CS of the free running mode is None	5.3.1	m	

Table B.24: Forced holdover operation (SD/NS-SEC_A_So)

Prerequisite: B.19/6 -- Forced holdover operation supported.

Item	Forced holdover operation (SD/NS-SEC_A_So)	Reference	Status	Support
1	The outgoing clock (AI_Ck) is defined by stored reference data in the holdover memory	5.3.1	m	
2	The outgoing QL of the holdover mode is QL-SEC	5.3.1	m	
3	The outgoing CS of the holdover mode is None	5.3.1	m	

Table B.25: Auto selection operation (SD/NS-SEC_A_So)

Prerequisite: B.19/8 -- Auto selection operation supported.

Item	Auto selection operation (SD/NS-SEC_A_So)	Reference	Status	Support
1	The auto selection operation works according two modes, locked and holdover	5.3.1	m	
2	The selection between the two modes is done automatically depending on the quality of the incoming reference signal and the selected QLMode	5.3.1	c2501	
3	In the locked mode the outgoing clock (AI_Ck) is locked to the incoming reference clock (CI_Ck)	5.3.1	m	
4	In the locked mode the holdover memory is constantly updated with this reference clock	5.3.1	m	
5	In the holdover mode, the outgoing clock (AI_Ck) is defined by stored reference data in the holdover memory	5.3.1	m	
6	In the holdover mode, the outgoing QL of the holdover mode is QL-SEC	5.3.1	m	
7	In the holdover mode, the outgoing CS of the holdover mode is None	5.3.1	m	
8	In the holdover mode, the holdover memory is no longer updated by the incoming reference clock	5.3.1	m	
9	In QL_enabled mode, the locked mode is selected if the incoming reference is not in the signal fail state and the quality level of the incoming reference is better or equal to QL-SEC	5.3.1	c2502	
10	In QL_enabled mode, the holdover mode is selected without delay when the incoming reference goes into the signal fail state or the quality level of the incoming signal is lower than QL–SEC	5.3.1	c2502	
11	In QL_enabled mode, the holdover mode is left when both the signal fail state has cleared and the quality level of the incoming signal is equal or better than QL-SEC	5.3.1	c2502	
12	In QL_disabled mode, the locked mode is selected if the incoming reference is not in the signal fail state	5.3.1	c2503	
13	In QL_disabled mode, the holdover mode is selected when the incoming reference goes into the signal fail state	5.3.1	c2503	
14	The actual mode is reported to the management via the MI_CkMode signal	5.3.1	c2504	
15	In QL_enabled mode, if the function is in the locked mode the outgoing QL follows the incoming QL	5.3.1	c2502	
16	In QL_enabled mode, in case of a change of the selected synchronization source, the outgoing QL is set to the new incoming QL after the settling time t_s	5.3.1	c2502	

Item	Auto selection operation (SD/NS-SEC_A_So)	Reference	Status	Support
17	In QL_enabled mode, if the incoming QL changes without a change of the selected synchronization source, the outgoing QL follows without settling time	5.3.1	c2502	
18	In QL_enabled mode, if the function is in the holdover mode, the outgoing QL is set to QL-SEC	5.3.1	c2502	
19	In QL_enabled mode, after leaving the holdover mode, the outgoing QL is set to the new incoming QL after the settling time t_s	5.3.1	c2502	
20	Normally the outgoing CS follows the incoming CS immediately	5.3.1	m	
21	If the function is in the holdover mode due to a too low QL value of the selected source (NS_CI_QL< "QL-SEC"), the outgoing CS is set to "None"	5.3.1	m	

c2501: IF B.19/4 THEN m ELSE n/a -- QLmode provisionable.

c2502: IF B.19/2 THEN m ELSE n/a -- QL-enabled mode supported.

c2503: IF B.19/3 THEN m ELSE n/a -- QL-disabled mode supported.

c2504: IF B.18/1 THEN m ELSE n/a -- MI_Ckmode supported.

Table B.26: QL settling time parameter value (SD/NS-SEC_A_So)

Prerequisite: B.19/8 -- Auto selection operation supported.

Item	QL settling time parameter value (SD/NS-SEC_A_So)	Reference	Status	Support	Values	
					Allowed	**Supported**
1	Settling Time value (in milliseconds)	5.3.1	m		$180 \leq t_s \leq 300$	

B.4.3.1.3 Defects (SD/NS-SEC_A_So)

Table B.27: dLTI defect (SD/NS-SEC_A_So)

Item	dLTI defect (SD/NS-SEC_A_So)	Reference	Status	Support
1	The function detects a Loss of Timing Inputs (dLTI) if a unconnected signal is present at its Connection Point (no input selected in NS_C) or if the input signal is failed (CI_SSF active)	5.3.1	m	
2	The dLTI defect is raised if CI_SSF = "true" or CI_CS = "None" for at least X seconds	5.3.1	m	
3	The dLTI defect is cleared if CI_SSF = "false" and CI_CS≠"None" for at least Y seconds	5.3.1	m	

Table B.28: dTLI delay parameter value(SD/NS-SEC_A_So)

Item	dTLI delay parameter value (SD/NS-SEC_A_So)	Reference	Status	Support	Values	
					Allowed	Supported
1	Detection Time for dTLI (X) (in seconds)	5.3.1	m		tba	
2	Clearance Time for dTLI (Y) (in seconds	5.3.1	m		tba	

B.4.3.1.4 Defect Correlation (SD/NS-SEC_A_So)

Table B.29: Defect Correlation (SD/NS-SEC_A_So)

Item	Defect Correlation (SD/NS-SEC_A_So)	Reference	Status	Support
1	The function implements the following logical equation: cTLI <--- dTLI	5.3.1	m	

B.4.3.2 SD layer to NS layer SEC quality Adaptation Sink function SD/NS-SEC_A_Sk

Prerequisite: B.1/5 -- SD layer to NS layer SEC quality Adaptation Sink function exists.

B.4.3.2.1 Processes (SD/NS-SEC_A_Sk)

Table B.30: Processes (SD/NS-SEC_A_Sk)

Item	Processes (SD/NS-SEC_A_Sk)	Reference	Status	Support
1	This function connects input with output only	5.3.2	m	

B.4.3.2.2 Consequent Actions (SD/NS-SEC_A_Sk)

Table B.31: Consequent Actions (SD/NS-SEC_A_Sk)

Item	Consequent Actions (SD/NS-SEC_A_Sk)	Reference	Status	Support
1	This function implements the following logical equation: aSSF <--- AI_TSF	5.3.2	m	

B.4.3.3 SD layer to NS layer SSU quality Adaptation Source function SD/NS-SSU_A_So

Prerequisite: B.1/6 -- SD/NS-SSU_A_So exists.

Table B.32: SD layer to NS layer SSU quality Adaptation Source function (SD/NS-SSU_A_So)

Item	SD layer to NS layer SSU quality Adaptation Source function (SD/NS-SSU_A_So)	Reference	Status	Support
1	no requirement	5.3.3	n/a	

B.4.3.4 SD layer to NS layer SSU quality Adaptation Sink function SD/NS-SSU_A_Sk

Prerequisite: B.1/7 -- SD/NS-SSU_A_Sk exists.

Table B.33: SD layer to NS layer SSU quality Adaptation Sink function SD/NS-SSU_A_Sk

Item	SD layer to NS layer SSU quality Adaptation Sink function (SD/NS-SSU_A_Sk)	Reference	Status	Support
1	no requirement	5.3.4	n/a	

B.4.3.5 SD layer to NS layer PRC quality Adaptation Source function SD/NS-PRC_A_So

Prerequisite: B.1/8 -- SD/NS-PRC_A_So exists.

Table B.34: SD layer to NS layer SSU quality Adaptation Sink function SD/NS-SSU_A_Sk

Item	SD layer to NS layer SSU quality Adaptation Sink function (SD/NS-SSU_A_Sk)	Reference	Status	Support
1	no requirement	5.3.5	n/a	

B.4.3.6 SD layer to NS layer Adaptation Source function SD/NS_A_So

Prerequisite: B.1/9 -- SD/NS_A_So function exists.

B.4.3.6.1 Management information (SD/NS_A_So)

Table B.35: Signal reports from SD/NS_A_So to EMF (SD/NS_A_So)

Item	Signal reports from SD/NS_A_So to EMF (SD/NS_A_So)	Reference	Status	Support
1	SD/NS_A_Sk_MI_cLTI is reported to the EMF	5.3.6	m	

B.4.3.6.2 Processes (SD/NS_A_So)

Table B.36: Processes (SD/NS_A_So)

Item	Processes (SD/NS_A_So)	Reference	Status	Support
1	The function produces the station output clock process	5.3.6	m	
2	The wander at the output of this function shall be within the MTIE mask specified in EN 300 462-5-1 [8], subclause 6.1, figure 2	5.3.6, subclause 6.1, figure 2 of EN 300 462-5-1 [8]	m	

B.4.3.6.3 Defects (SD/NS_A_So)

Table B.37: dLTI defect (SD/NS_A_So)

Item	dLTI defect (SD/NS_A_So)	Reference	Status	Support
1	The function detects a Loss of Timing Inputs (dLTI) if a unconnected signal is present at its Connection Point (no input selected in NS_C) or the input signal is failed (CI_SSF) active	5.3.6	m	
2	The defect is raised if CI_SSF = "true" or CI_CS = "None" for at least X seconds	5.3.6	m	
3	The defect is cleared if CI_SSF = "false" and CI_CS≠"None" for at least Y seconds	5.3.6	m	

Table B.38: dTLI delay parameter value (SD/NS_A_So)

Item	dTLI delay parameter value (SD/NS_A_So)	Reference	Status	Support	Values	
					Allowed	Supported
1	Detection Time for dTLI (X) (in seconds)	5.3.6	m		tba	
2	Clearance Time for dTLI (Y) (in seconds)	5.3.6	m		tba	

B.4.3.6.4 Consequent Actions (SD/NS_A_So)

Table B.39: Consequent Actions (SD/NS_A_So)

Item	Consequent actions SD/NS_A_So)	Reference	Status	Support
1	The function implements the following logical equation: aTSF <--- CI_SSF	5.3.6	m	

B.4.3.6.5 Defect Correlation (SD/NS_A_So)

Table B.40: Defect Correlation (SD/NS_A_So)

Item	Defect Correlation (SD/NS_A_So)	Reference	Status	Support
1	The function implements the following logical equation: cLTI <--- dLTI	5.3.6	m	

Annex C (normative): ICS proforma for NS (Network Sinchronization) Layer

C.1 Identification of the implementation

In the present document, an IUT, and of course the identification of an IUT refers to a NS Layer instance implemented inside the SUT.

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should be filled in so as to provide as much detail as possible regarding version numbers and configuration options.

The product supplier information and client information should both be filled in if they are different.

A person who can answer queries regarding information supplied in the ICS should be named as the contact person.

C.1.1 Date of the statement

.....

C.1.2 Implementation Under Test (IUT) identification

IUT name:

.....

.....

IUT version

Hardware version:

.....

.....

Software version:

.....

.....

Firmware version:

.....

.....

C.1.3 System Under Test (SUT) identification

SUT name:

.....

.....

Hardware configuration:

.....

.....

SUT Software version:

.....

.....

SUT Firmware version:

.....

Operating system:

.....

.....

C.1.4 Product supplier

Name:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

.....

C.1.5 Client

Name:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

.....

C.1.6 ICS contact person

Name:

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

C.2 Identification of the EN

This ICS proforma applies to the following document:

EN 300 417-6-1 [1]: "Transmission and Multiplexing (TM); Generic requirements of transport functionality of equipment; Part 6-1: Synchronization layer functions".

C.3 Global statement of conformance of NS Layer

Are all mandatory capabilities implemented (Yes/No) .....

NOTE: Answering "No" to this question indicates non-conformance to the EN specification. Non-supported mandatory capabilities are to be identified in the ICS, with an explanation of why the implementation is non-conforming, on pages attached to the ICS proforma.

Answering "Yes" to this question indicates only that all the capabilities with the explicit status "m" are supported. It is not necessary to fill in the support column of the associated items.

C.4 NS Layer Functions

C.4.0 NS Layer Description

Table C.1: NS Layer functions

Item	NS Layer functions	Reference	Status	Support
1	NS Connection function (NS_C)	6	m	

C.4.0.1 Characteristic Information

Table C.2: NS Characteristic Information

Prerequisite: C.1/1 -- NS Connection function is present.

Item	NS Characteristic Information	Reference	Status	Support
1	The Characteristic Information (CI) at this point is a timing information - Clock signal (CK) with associated server SF, QL and CSid.	6	m	

C.4.1 NS_Connection functions NS_C

Prerequisite: C.1/1 -- NS_C function exists.

Table C.3: Generalities (NS_C)

Item	Generalities (NS_C)	Reference	Status	Support
1	This function is used to select a single input reference for the NE Synchronization distribution	6, 4.6	o.301	
2	This function is used to reference(s) for the station clock output(s)	6, 4.6	o.301	
3	The two possible uses of this function are independent	6, 4.6	c301	
4	All processes inside the NS_C process works in the same QL mode	6, 4.6	c301	

o.301: It is mandatory to support at least one of these items.

c301: IF C.3/1 AND C.3/2 THEN m ELSE n/a.

C.4.1.1 Management information

Table C.4: Configuration/provisioning of information from EMF to NS_C

Item	Configuration/provisioning of information from EMF to NS_C	Reference	Status	Support
1	NS_C_MI_QLmode is provisionable from the EMF	6.1	m	
2	NS_C_MI_EXTCMD is provisionable from the EMF for Synchronization distribution selection process	6.1	c401	
3	NS_C_MI_EXTCMD for station clock output selection process is provisionable from the EMF	6.1	c402	
4	NS_C_MI_WTR is provisionable from the EMF for Synchronization distribution selection process	6.1	c401	
5	NS_C_MI_WTR is provisionable from the EMF for station clock output selection process	6.1	c402	
6	NS_C_MI_priority is provisionable from the EMF for each input of the selector used for the synchronization distribution selection process	6.1	c401	
7	NS_C_MI_CLR_WTR is provisionable from the EMF for each input of the selector used for the synchronization distribution selection process	6.1	c401	
8	NS_C_MI_Set_lockout is provisionable from the EMF for each input of the selector used for the synchronization distributionselection process	6.1	c401	
9	NS_C_MI_Clr_Lockout is provisionable from the EMF for each input of the selector used for the synchronization distribution selection process	6.1	c401	
10	NS_C_MI_priority is provisionable from the EMF for each input of the selector used for station clock output selection process	6.1	c402	
11	NS_C_MI_CLR_WTR is provisionable from the EMF for each input of the selector used for station clock output selection process	6.1	c402	
12	NS_C_MI_Set_lockout is provisionable from the EMF for each input of the selector used for station clock output selection process	6.1	c402	
13	NS_C_MI_Clr_Lockout is provisionable from the EMF for each input of the selector used for station clock output selection process	6.1	c402	

c401: IF C.3/1 THEN m ELSE n/a -- NS_C used for Synchronization distribution.

c402: IF C.3/2 THEN m ELSE n/a -- NS_C used for station clock output.

Table C.5: Signal reports from NS_C to EMF

Item	Signal reports from NS_C to EMF	Reference	Status	Support
1	NS_C_MI_Selected_Input is reported to the EMF for the Synchronization distribution selection process	6.1	c501	
2	NS_C_MI_Reject_Request is reported to the EMF for the Synchronization distribution selection process	6.1	c501	
3	NS_C_MI_Selected_Input is reported to the EMF for the station clock output selection process	6.1	c502	
4	NS_C_MI_Reject_Request is reported to the EMF for the station clock output selection process	6.1	c502	
5	NS_C_MI_State is reported to the EMF for each input of the selector used for the synchronization distribution selection process	6.1	c501	
6	NS_C_MI_State is reported to the EMF for each input of the selector used for the station clock output selection process	6.1	c502	

c501: IF C.3/1 THEN m ELSE n/a -- layer used for Synchronization of the NE.

c502: IF C.3/2 THEN m ELSE n/a -- layer used for station clock generation.

C.4.1.2 Processes (NS_C)

Table C.6: Generic processes (NS_C)

Item	Generic processes (NS_C)	Reference	Status	Support
1	Each selection process selects a synchronization source out of the nominated set of synchronization source inputs determined by the selection algorithm	6.1	c601	
2	The function can operate in QL enabled mode	6.1	m	
3	The function can operate in QL disabled mode	6.1	m	
4	QL mode is provisionable via the MI_QLmode signal	6.1	c602	
5	The function supports automatic reference selection process as described in subclause 4.6 and in annex A	6.1, 4.6, annex A	m	
6	The function supports one or several External commands defined in subclause 4.11	6.1, 4.11	m	
7	The function supports the use of Synchronization source priorities defined in subclause 4.10	6.1, 4.10	m	
8	The function supports a holdoff timer per input of each selection process	6.1	m	
9	The holdoff time for each holdoff timer is fixed in the range 300 ms to 1 800 ms	6.1, 4.8	c603	
10	The function supports a wait to restore timer per input of each selection process	6.1	m	
11	Each wait to restore timer is compliant to subclause 4.9	6.1, 4.9	c604	
12	Each wait to restore timer can be cleared individually by MI_CLR_WTR before WTR time is expired	6.1, 4.9	c604	
13	For each input ("m") to a selection process the function generates a Signal Fail according to the logical equation: SF[m] = CI_SSF[m] OR WTR/HO[CI_SSF[m]]	6.1	m	
14	The function reports individually the state (available, failed, WTR) of each input to a selection process via MI_State	6.1	c605	
15	The actual selected input of a selection process is reported via MI_SelectedInput	6.1	c606	
16	The function is able to generate an unconnected NS signal. The unconnected NS signal has a undefined clock, a QL of QL-UNC, a CS value of "None" and SF true	6.1	m	
17	In QL-enabled mode, the QL of a Synchronization source with active SF is set to QL-FAILED	4.7	c607	
18	In QL-enabled mode, the selection process will react to this QL value instead of the SF signal	4.7	c607	

c601: IF (C.3/1 OR C.3/2) THEN m ELSE n/a -- NS_C used for Synchronization distribution or for station clock output.

c602: IF (C.6/2 AND C.6/3 AND C.4/1) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c603: IF C.6/8 THEN m ELSE n/a -- holdoff timer(s) supported.

c604: IF C.6/10 THEN m ELSE n/a -- wait to restore timer(s) supported.

c605: IF (C.5/5 OR C.5/6) THEN m ELSE n/a -- MI_State supported.

c606: IF C.5/3 THEN m ELSE n/a -- MI_Selected_Input supported.

c607: IF C.6/2 THEN m ELSE n/a -- QL-enabled mode supported.

Table C.7: Hold-off operation

Item	Hold-off operation	Reference	Status	Support
1	For each hold-off timer, in QL-disabled mode SF is active for the hold-off time before it is passed to the selection process	6.1, 4.8	c701	
2	For each hold-off timer, in QL-enabled mode a QL value of QL-FAILED exists for the hold-off time before it is passed to the selection process. In the mean time the previous QL value is passed to the selection process	6.1, 4.8	c702	
3	For each hold-off timer, in QL-enabled mode other QL values than QL-FAILED will be passed to the selection process immediately	6.1, 4.8	c702	
4	For each hold-off timer, the hold-off time is fixed in the range of 300 ms to 1 800 ms	6.1, 4.8	c703	

c701: IF (C.6/3 AND C.6/8) THEN m ELSE n/a -- QL-disabled mode and hold-off timer(s) supported.

c702: IF (C.6/2 AND C.6/8) THEN m ELSE n/a -- QL-enabled mode and hold-off timer(s) supported.

c703: IF C.6/8 THEN m ELSE n/a -- hold-off timer(s) supported.

Table C.8: Wait to Restore (WTR) operation

Item	Wait to Restore (WTR) operation	Reference	Status	Support
1	For each WTR timer, in QL-disabled mode after deactivation of SF, the Signal Fail has to be false for the WTR time before SF false is passed to the selection process. In the mean time SF true is passed to the selection process	6.1, 4.9	c801	
2	For each WTR timer, in QL-enabled mode after a change of the QL from QL-FAILED to any other value, the quality value has to be different from QL-FAILED for the WTR time before the new QL value is passed to the selection process. In the mean time the QL QL-FAILED is passed to the selection process	6.1, 4.9	c802	
3	The WTR time is configurable in the range of 0 to 12 minutes in steps of 1 minute for all inputs of a selection process in common	6.1, 4.9	c803	
4	For each WTR timer the default value is 5 minutes	6.1, 4.9	c803	
5	Each WTR timer can be cleared with a separate Clear (CLR) command. If a WTR timer is cleared the new QL value (in QL-enabled mode) or SF value (in QL-disabled mode) is immediately passed to the selection process	6.1, 4.9	c803	

c801: IF (C.6/3 AND C.6/10) THEN m ELSE n/a -- QL-disabled mode and WTR timer(s) supported.

c802: IF (C.6/2 AND C.6/10) THEN m ELSE n/a -- QL-enabled mode and WTR timer(s) supported.

c803: IF C.6/10 THEN m ELSE n/a -- WTR timer(s) supported.

Table C.9: Unconnected NS signal generation

Item	Unconnected NS signal generation	Reference	Status	Support
1	The function generates an unconnected SD signal, specified as: undefined clock, QL value QL-UNC, CS value "None" and SF true.	6.1	m	

C.4.1.3 Consequent Actions (NS_C)

Table C.10: Consequent actions for NS_C

Item	Consequent actions for NS_C	Reference	Status	Support
1	All outputs not connected to an input are connected to the "unconnected NS Signal"	6.1	c1001	

c1001: IF C.9/1 THEN m ELSE n/a -- NS_C able to generate an Unconnected NS signal.

C.4.2 Selection Algorithm and processes

C.4.2.1 Generics and selection Processes

Table C.11: Generics on NS_C process

Item	Generics on NS_C process	Reference	Status	Support
1	The NS_C function allows to "Nominate" a set of inputs as candidate for an automatic selection process	4.6	m	
2	The "nomination" is made using the assignment of priorities for each input of the connection matrix	4.6	c1101	
3	The Function is able to select the "best" Synchronization source according to the selection algorithm	4.6	m	
4	One or several external commands are usable. These commands impact the selection algorithm	4.6	c1102	

c1101: IF C.6/7 THEN m ELSE n/a -- sources priorities supported.

c1102: IF C.6/6 THEN m ELSE n/a -- external commands supported.

C.4.2.2 Priorities assignment

Prerequisite: C.11/2 -- Assignment of priorities is supported.

Table C.12: Priorities assignments

Item	Priorities assignments	Reference	Status	Support
1	The assignment of priorities is used in order to define the preferred Synchronization flow in the network	4.10	m	
2	Priorities are allocated to assigne Synchronization sources within the Network element	4.10	m	
3	Priorities reflect a preference of one Synchronization source over the other	4.10	m	
4	No preference exists between sources with the same priorities	4.10	m	
5	No revertible behaviour is made between sources with the same priorities	4.10	m	
6	The value of "undef" is assigned to all unconnected signals	4.10	m	
7	A source with a assigned priority of "dis" or "undef" is not candidate for the selection process	4.10	m	

C.4.2.3 External commands

Prerequisite: C.11/4 -- External commands supported.

Table C.13: External commands per nominated sources

Item	External commands per nominated sources	Reference	Status	Support
1	It's possible to temporary remove any source of the selection process	4.11.1	m	
2	This is controlled by the Lockout Commands	4.11.1	m	
3	Lockout commands are accepted for each source of the selection process	4.11.1	m	
4	The lockout status of a disable source of Synchronization is "off"	4.11.1	m	
5	The NS_C maintains the priority of a disabled Synchronization source	4.11.1	m	
6	The Set_Lockout#p command is used to set the lockout state of the source "p" as "on". This Source is no longer considered as available in the selection process	4.11.1.1	m	
7	The Clear_Lockout#p command is used to set the lockout state of the source "p" as "off". This Source is again considered as available in the selection process	4.11.1.2	m	

Table C.14: External commands per selection process

Item	External commands per selection process	Reference	Status	Support
1	A "Forced switch command (Fsw)" is used to override the currently selected Synchronization source	4.11.2	m	
2	A "Manual switch command (Msw)" is used to override the currently selected Synchronization source	4.11.2	m	
3	A "clear" command allows to clear other external commands per selection process	4.11.2	c1401	

c1401: IF (C.14/1 OR C.14/2) THEN m ELSE n/a -- Forced or manual Switch commands supported.

Table C.15: Forced switch command behaviour

Prerequisite: C.14/1 -- Forced switch command used.

Item	Forced switch command behaviour	Reference	Status	Support
1	A Forced Switch command is available for each input	4.11.2.2	m	
2	The Forced switch override all previous "Forced switch" commands	4.11.2.2	m	
3	The Forced switch override the "Manual switch" command	4.11.2.2	m	
4	If the Input p selected by the Forced Switch#p command is "dis", the Forced Switch command is rejected	4.11.2.2	m	
5	If the Input p selected by the Forced Switch#p command is locked out, the Forced Switch command is rejected	4.11.2.2	m	
6	A "Forced Switch#p" command to a source which is in SF state causes the NE entering to holdover	4.11.2.2	m	
7	A "Forced Switch#p" command to a source with as a QL of DNU in QL_enable mode causes the NE entering to holdover	4.11.2.2	m	

Table C.16: Manual switch command behaviour

Prerequisite: C.14/2 -- Manual switch command used.

Item	Manual switch command behaviour	Reference	Status	Support
1	The "Manual Switch#p" command select the Synchronization source #p	4.11.2.3	m	
2	If the #p source selected by the "Manual Switch#p" is disable, the manual switch command is automatically rejected	4.11.2.3	m	
3	If the #p source selected by the "Manual Switch#p" is locked out, the manual switch command is automatically rejected	4.11.2.3	m	
4	If the #p source selected by the "Manual Switch#p" has a QL of DNU, the manual switch command is automatically rejected if the selection process is in QL_enabled mode	4.11.2.3	m	
5	If the QL #p source selected by the "Manual Switch#p" is lower than the other source signals, the manual switch command is automatically rejected if the selection process is in QL_enabled mode	4.11.2.3	m	

Table C.17: Clear command

Prerequisite: C.14/3 -- Clear command used.

Item	Clear command	Reference	Status	Support
1	The "Clear" command clear the "Manual switch" command	4.11.2.1	m	
2	The "Clear" command clear the "Forced switch" command	4.11.2.1	m	

C.4.2.4 Automatic Selection process

Table C.18: Selection process in QL_enabled mode

Prerequisite: C.18/2 -- QL_enabled mode supported.

Item	Selection process in QL_enable mode	Reference	Status	Support
1	QL level is used as a parameter for the automatic selection process	4.12.1	m	
2	Signal Fail (via QL Failed) is used as a parameter for the automatic selection process	4.12.1	m	
3	The priorities associated to the inputs are used as parameters for the automatic selection process	4.12.1	m	
4	External commands are used as parameters for the automatic selection process	4.12.1	m	
5	If no External command is active, the algorithm of the selection process select the signal with the highest quality level	4.12.1	m	
6	If multiple inputs have the same highest quality level, the input with the highest priority is selected	4.12.1	m	
7	If multiple inputs have the same highest quality level and the same highest priority, the current existing reference is maintained (if it's belong this group). Else, an arbitrary reference input of this group is selected	4.12.1	m	
8	If no input could be selected, the function outputs the unconnected signal	4.12.1	m	

Table C.19: Selection process in QL_disabled mode

Prerequisite: C.6/3 -- QL_disabled mode supported.

Item	Selection process in QL_disabled mode	Reference	Status	Support
1	Signal Fail is used as a parameter for the automatic selection process	4.12.2	m	
2	The priorities associated to the input's are used as parameters for the automatic selection process	4.12.2	m	
3	External commands are used as parameters for the automatic selection process	4.12.2	m	
4	If no External command is active, the algorithm of the selection process select the signal with the highest priority level which is not experiencing a "signal fail" condition	4.12.2	m	
5	If multiple inputs have same highest priority, the current existing reference is maintained (if it's belong this group). else, an arbitrary reference input of this group is selected	4.12.2	m	
6	If no input could be selected, the function outputs the unconnected signal	4.12.2	m	

Annex D (normative): ICS proforma for Transport Layer (TL) to SD layer adaptation functions

D.1 Identification of the implementation

In the present document, an IUT, and of course the identification of an IUT refers to the set of TL to SD layer adaptation functions implemented inside the SUT.

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should be filled in so as to provide as much detail as possible regarding version numbers and configuration options.

The product supplier information and client information should both be filled in if they are different.

A person who can answer queries regarding information supplied in the ICS should be named as the contact person.

D.1.1 Date of the statement

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D.1.2 Implementation Under Test (IUT) identification

IUT name:

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IUT version

Hardware version:

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Software version:

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Firmware version:

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D.1.3 System Under Test (SUT) identification

SUT name:

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Hardware configuration:

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SUT Software version:

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SUT Firmware version:

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Operating system:

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D.1.4 Product supplier

Name:

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Address:

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Telephone number:

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Facsimile number:

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E-mail address:

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Additional information:

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D.1.5 Client

Name:

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Address:

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Telephone number:

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Facsimile number:

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E-mail address:

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Additional information:

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.....

D.1.6 ICS contact person

Name:

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Telephone number:

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Facsimile number:

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E-mail address:

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Additional information:

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D.2 Identification of the EN

This ICS proforma applies to the following document:

EN 300 417-6-1 [1]: "Transmission and Multiplexing (TM); Generic requirements of transport functionalities of equipment; Synchronization layer functions".

D.3 Global statement of conformance of TL to SD layer adaptation functions

Are all mandatory capabilities implemented (Yes/No) .....

NOTE: Answering "No" to this question indicates non-conformance to the EN specification. Non-supported mandatory capabilities are to be identified in the ICS, with an explanation of why the implementation is non-conforming, on pages attached to the ICS proforma.

Answering "Yes" to this question indicates only that all the capabilities with the explicit status "m" are supported. It is not necessary to fill in the support column of the associated items.

D.4 TL to SD Layer Adaptation Functions

D.4.0 TL to SD Layer Adaptation Functions Description

Table D.1: TL to SD layer adaptation functions

Item	TL to SD layer adaptation functions	Reference	Status	Support
1	MS1/SD Layer Adaptation Source function (MS1/SD_A_So)	4.16, figure15	o	
2	MS1/SD Layer Adaptation Sink function (MS1/SD_A_Sk)	4.16, figure15	o.101	
3	MS4/SD Layer Adaptation Source function (MS4/SD_A_So)	4.16, figure15	o	
4	MS4/SD Layer Adaptation Sink function (MS4/SD_A_Sk)	4.16, figure15	o.101	
5	MS16/SD Layer Adaptation Source function (MS16/SD_A_So)	4.16, figure15	o	
6	MS16/SD Layer Adaptation Sink function (MS16/SD_A_Sk)	4.16, figure15	o.101	
7	P31s/SD Layer Adaptation Source function (P31s/SD_A_So)	4.16, figure15	o	
8	P31s/SD Layer Adaptation Sink function (P31s/SD_A_Sk)	4.16, figure15	o.101	
9	P4s/SD Layer Adaptation Source function (P4s/SD_A_So)	4.16, figure15	o	
10	P4s/SD Layer Adaptation Sink function (P4s/SD_A_Sk)	4.16, figure15	o.101	
11	Type 1 P12s/SD Layer Adaptation Source function for station clock output supporting SSM (P12s/SD-sc-1_A_So)	4.16, figure15	o	
12	Type 2 P12s/SD Layer Adaptation Source function for station clock output not supporting SSM (P12s/SD-sc-2_A_So)	4.16, figure15	o	
13	Type 1 P12s/SD Layer Adaptation Sink for traffic input port (P12s/SD-tf_A_Sk)	4.16, figure 15	o.101	
14	Type 2 P12s/SD Layer Adaptation Sink for station clock input port (P12s/SD-sc_A_Sk)	4.16, figure 5	o.101	
15	T12/SD Layer Adaptation Source (T12/SD_A_So)	4.16, figure 15	o	
16	T12/SD Layer Adaptation Sink (T12/SD_A_Sk)	4.16, figure 15	o.101	

o.101: It is mandatory to support at least one of these items -- At least one adaptation sink function is mandatory.

D.4.1 STM-1 Multiplex Section Adaptation functions

D.4.1.1 STM-1 multiplex section to SD Layer Adaptation Source MS1/SD_A_So

Prerequisite: D.1/1 -- MS1/SD_A_So function exists.

D.4.1.1.1 Management Information (MS1/SD_A_So)

Table D.2: Configuration/provisioning of information from EMF to MS1/SD_A_So

Item	Configuration/provisioning of information from EMF to MS1/SD_A_So	Reference	Status	Support
1	MS1/SD_A_So_MI_SSMdis is provisionable from the EMF	7.1.1	m	
2	MS1/SD_A_So_MI_QLmode is provisionable from the EMF	7.1.1	m	

D.4.1.1.2 Processes (MS1/SD_A_So)

Table D.3: Processes (MS1/SD_A_So)

Item	Processes (MS1/SD_A_So)	Reference	Status	Support
1	The function can operate in QL-enabled mode	7.1.1	m	
2	The function can operate in QL-disabled mode	7.1.1	m	
3	The mode is provisionable via MI_Qlmode	7.1.1	c301	
4	In QL-enabled mode this function converts the CI_QL into the 4 bit SSM code.	7.1.1	c302	
5	In QL-enabled mode, the SSM code is generated depending on the input CI_QL in accordance with ETS 300 147 [13]and table 18	7.1.1, table 18, ETS 300 147 [13]	c302	
6	In QL-enabled mode, if MI_SSMdis is True, SSM is forced to "1111" pattern	7.1.1, 4.5.2	c303	
7	In QL-enabled mode, if RI_CS is equal to CI_CS, the transmitted SSM is forced to "1111" pattern	7.1.1, 4.13	c302	
8	In QL-disabled mode the transmitted SSM code is forced to "1111" pattern	7.1.1	c304	
9	The SSM code is transmitted into bits 5 to 8 of byte S1	7.1.1	m	

c301: IF (D.3/1 AND D.3/2 AND D.2/2) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c302: IF D.3/1 THEN m ELSE n/a -- QL-enabled mode supported.

c303: IF (D.3/1 AND D.2/1) THEN m ELSE n/a -- MI_SSMdis supported.

c304: IF D.3/2 THEN m ELSE n/a -- QL-disabled mode supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.1.1.

D.4.1.2 STM-1 multiplex section to SD Layer Adaptation Sink MS1/SD_A_Sk

Prerequisite: D.1/2 -- MS1/SD_A_Sk function exists.

D.4.1.2.1 Management Information (MS1/SD_A_Sk)

Table D.4: Configuration/provisioning of information from EMF to MS1/SD_A_Sk

Item	Configuration/provisioning of information from EMF to MS1/SD_A_Sk	Reference	Status	Support
1	MS1/SD_A_Sk_MI_SSMsupp is provisionable from the EMF	7.1.2	m	
2	MS1/SD_A_Sk_MI_CSid is provisionable from the EMF	7.1.2	m	
3	MS1/SD_A_Sk_MI_QLmode is provisionable from the EMF	7.1.2	m	

D.4.1.2.2 Processes (MS1/SD_A_Sk)

Table D.5: Processes (MS1/SD_A_Sk)

Item	Processes (MS1/SD_A_Sk)	Reference	Status	Support
1	This functions extracts and accepts the 4 bit Synchronization Status Message (SSM)	7.1.2, ETS 300 147 [13]	m	
2	This functions supplies the timing signal, recovered by the physical section layer, to the synchronization distribution layer	7.1.2	m	
3	This function can operate in QL-enabled mode	7.1.2	m	
4	This function can operate in QL-disabled mode	7.1.2	m	
5	The QL mode is provisionable via MI_QLmode	7.1.2	c501	
6	In QL-enabled mode, bits 5 to 8 of byte S1 are recovered and accepted if the same code is present in three consecutive frames	7.1.2	c502	
7	In QL-enabled mode, the accepted code is converted to a quality level QL[SSM] as specified in table 4 and is output via CI_QL	7.1.2, table 4	c502	
8	In QL-enabled mode, if MI_SSMsupp is false, the received SSM code is ignored	7.1.2	c503	
9	In QL-enabled mode, if MI_SSMsupp is false, CI_QL is forced to the QL–NSUPP	7.1.2	c503	
10	In QL-disabled mode, the received SSM code is ignored	7.1.2	c504	
11	In QL-disabled mode, the CI_QL is forced to the QL-NSUPP	7.1.2	c504	
12	The function inserts the clock source identifier received via MI_CSid into CI_CS	7.1.2	c505	
13	The function inserts the clock source identifier received via MI_CSid into RI_CS	7.1.2	c505	

c501: IF (D.5/3 AND D.5/4 AND D.4/3) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c502: IF D.5/3 THEN m ELSE n/a -- QL-enabled mode supported.

c503: IF (D.5/3 AND D.4/1) THEN m ELSE n/a -- QL-enabled mode supported and MI_SSMsupp supported.

c504: IF D.5/4 THEN m ELSE n/a -- QL-disabled mode supported.

c505: IF D.4/2 THEN m ELSE n/a -- MI_CSid supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.1.2.

D.4.1.2.3 Consequent Actions (MS1/SD_A_Sk)

Table D.6: Consequent actions (MS1/SD_A_Sk)

Item	Consequent actions (MS1/SD_A_Sk)	Reference	Status	Support
1	The function implements the following logical equation: aSSF ← AI_TSF	7.1.2	m	

D.4.2 STM-4 Multiplex Section Adaptation functions

D.4.2.1 STM-4 multiplex section to SD Layer Adaptation Source MS4/SD_A_So

Prerequisite: D.1/3 -- MS4/SD_A_So function exists.

D.4.2.1.1 Management Information (MS4/SD_A_So)

Table D.7: Configuration/provisioning of information from EMF to MS4/SD_A_So

Item	Configuration/provisioning of information from EMF to MS4/SD_A_So	Reference	Status	Support
1	MS4/SD_A_So_MI_SSMdis is provisionable from the EMF	7.2.1	m	
2	MS4/SD_A_So_MI_QLmode is provisionable from the EMF	7.2.1	m	

D.4.2.1.2 Processes (MS4/SD_A_So)

Table D.8: Processes (MS4/SD_A_So)

Item	Processes (MS4/SD_A_So)	Reference	Status	Support
1	The function can operate in QL-enabled mode	7.2.1	m	
2	The function can operate in QL-disabled mode	7.2.1	m	
3	The mode is provisionable via MI_Qlmode	7.2.1	c801	
4	In QL-enabled mode this function converts the CI_QL into the 4 bit SSM code	7.2.1	c802	
5	In QL-enabled mode, the SSM code is generated depending on the input CI_QL in accordance with ETS 300 147 [13] and table 21	7.2.1, table 21, ETS 300 147 [13]	c802	
6	In QL-enabled mode, if MI_SSMdis is True, SSM is forced to "1111" pattern	7.2.1, 4.5.2	c803	
7	In QL-enabled mode, if RI_CS is equal to CI_CS, the transmitted SSM is forced to "1111" pattern	7.2.1, 4.13	c802	
8	In QL-disabled mode the transmitted SSM code is forced to "1111" pattern	7.2.1	c804	
9	The SSM code is transmitted into bits 5 to 8 of byte S1	7.2.1	m	

c801: IF (D.8/1 AND D.8/2 AND D.7/2) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c802: IF D.8/1 THEN m ELSE n/a -- QL-enabled mode supported.

c803: IF (D.8/1 AND D.7/1) THEN m ELSE n/a -- MI_SSMdis supported.

c804: IF D.8/2 THEN m ELSE n/a -- QL-disabled mode supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.2.1.

D.4.2.2 STM-4 multiplex section to SD Layer Adaptation Sink MS4/SD_A_Sk

Prerequisite: D.1/4 -- MS4/SD_A_Sk function exists.

D.4.2.2.1 Management Information (MS4/SD_A_Sk)

Table D.9: Configuration/provisioning of information from EMF to MS4/SD_A_Sk

Item	Configuration/provisioning of information from EMF to MS4/SD_A_Sk	Reference	Status	Support
1	MS4/SD_A_Sk_MI_SSMsupp is provisionable from the EMF	7.2.2	m	
2	MS4/SD_A_Sk_MI_CSid is provisionable from the EMF	7.2.2	m	
3	MS4/SD_A_Sk_MI_QLmode is provisionable from the EMF	7.2.2	m	

D.4.2.2.2 Processes (MS4/SD_A_Sk)

Table D.10: Processes (MS4/SD_A_Sk)

Item	Processes (MS4/SD_A_Sk)	Reference	Status	Support
1	This functions extracts and accepts the 4 bit Synchronization Status Message (SSM)	7.2.2, ETS 300 147 [13]	m	
2	This functions supplies the timing signal, recovered by the physical section layer, to the synchronization distribution layer	7.2.2	m	
3	This function can operate in QL-enabled mode	7.2.2	m	
4	This function can operate in QL-disabled mode	7.2.2	m	
5	The QL mode is provisionable via MI_QLmode	7.2.2	c1001	
6	In QL-enabled mode, bits 5 to 8 of byte S1 are recovered and accepted if the same code is present in three consecutive frames	7.2.2	c1002	
7	In QL-enabled mode, the accepted code is converted to a quality level QL[SSM] as specified in table 4 and is output via CI_QL	7.2.2, table 4	c1002	
8	In QL-enabled mode, if MI_SSMsupp is false, the received SSM code is ignored	7.2.2	c1003	
9	In QL-enabled mode, if MI_SSMsupp is false, CI_QL is forced to the QL–NSUPP	7.2.2	c1003	
10	In QL-disabled mode, the received SSM code is ignored	7.2.2	c1004	
11	In QL-disabled mode, the CI_QL is forced to the QL-NSUPP	7.2.2	c1004	
12	The function inserts the clock source identifier received via MI_CSid into CI_CS	7.2.2	c1005	
13	The function inserts the clock source identifier received via MI_CSid into RI_CS	7.2.2	c1005	

c1001: IF (D.10/3 AND D.10/4 AND D.9/3) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c1002: IF D.10/3 THEN m ELSE n/a -- QL-enabled mode supported.

c1003: IF (D.10/3 AND D.9/1) THEN m ELSE n/a -- QL-enabled mode supported and MI_SSMsupp supported.

c1004: IF D.10/4 THEN m ELSE n/a -- QL-disabled mode supported.

c1005: IF D.9/2 THEN m ELSE n/a -- MI_CSid supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.2.2.

D.4.2.2.3 Consequent Actions (MS4/SD_A_Sk)

Table D.11: Consequent actions (MS4/SD_A_Sk)

Item	Consequent actions (MS4/SD_A_Sk)	Reference	Status	Support
1	The function implements the following logical equation: aSSF ← AI_TSF	7.2.2	m	

D.4.3 STM-16 Multiplex Section Adaptation functions

D.4.3.1 STM-16 multiplex section to SD Layer Adaptation Source MS16/SD_A_So

Prerequisite: D.1/5 -- MS16/SD_A_So function exists.

D.4.3.1.1 Management Information (MS16/SD_A_So)

Table D.12: Configuration/provisioning of information from EMF to MS16/SD_A_So

Item	Configuration/provisioning of information from EMF to MS16/SD_A_So	Reference	Status	Support
1	MS16/SD_A_So_MI_SSMdis is provisionable from the EMF	7.3.1	m	
2	MS16/SD_A_So_MI_QLmode is provisionable from the EMF	7.3.1	m	

D.4.3.1.2 Processes (MS16/SD_A_So)

Table D.13: Processes (MS16/SD_A_So)

Item	Processes (MS16/SD_A_So)	Reference	Status	Support
1	The function can operate in QL-enabled mode	7.3.1	m	
2	The function can operate in QL-disabled mode	7.3.1	m	
3	The mode is provisionable via MI_Qlmode	7.3.1	c1301	
4	In QL-enabled mode this function converts the CI_QL into the 4 bit SSM code.	7.3.1	c1302	
5	In QL-enabled mode, the SSM code is generated depending on the input CI_QL in accordance with ETS 300 147 [13] and table 24	7.3.1, table 24, ETS 300 147 [13]	c1302	
6	In QL-enabled mode, if MI_SSMdis is True, SSM is forced to "1111" pattern	7.3.1, 4.5.2	c1303	
7	In QL-enabled mode, if RI_CS is equal to CI_CS, the transmitted SSM is forced to "1111" pattern	7.3.1, 4.13	c1302	
8	In QL-disabled mode the transmitted SSM code is forced to "1111" pattern	7.3.1	c1304	
9	The SSM code is transmitted into bits 5 to 8 of byte S1	7.3.1	m	

c1301: IF (D.13/1 AND D.13/2 AND D.12/2) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c1302: IF D.13/1 THEN m ELSE n/a -- QL-enabled mode supported.

c1303: IF (D.13/1 AND D.12/1) THEN m ELSE n/a -- MI_SSMdis supported.

c1304: IF D.13/2 THEN m ELSE n/a -- QL-disabled mode supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.3.1.

D.4.3.2 STM-16 multiplex section to SD Layer Adaptation Sink MS16/SD_A_Sk

Prerequisite: D.1/6 -- MS16/SD_A_Sk function exists.

D.4.3.2.1 Management Information (MS16/SD_A_Sk)

Table D.14: Configuration/provisioning of information from EMF to MS16/SD_A_Sk

Item	Configuration/provisioning of information from EMF to MS16/SD_A_Sk	Reference	Status	Support
1	MS16/SD_A_Sk_MI_SSMsupp is provisionable from the EMF	7.3.2	m	
2	MS16/SD_A_Sk_MI_CSid is provisionable from the EMF	7.3.2	m	
3	MS16/SD_A_Sk_MI_QLmode is provisionable from the EMF	7.3.2	m	

D.4.3.2.2 Processes (MS16/SD_A_Sk)

Table D.15: Processes (MS16/SD_A_Sk)

Item	Processes (MS16/SD_A_Sk)	Reference	Status	Support
1	This functions extracts and accepts the 4 bit Synchronization Status Message (SSM)	7.3.2, ETS 300 147 [13]	m	
2	This functions supplies the timing signal, recovered by the physical section layer, to the synchronization distribution layer	7.3.2	m	
3	This function can operate in QL-enabled mode	7.3.2	m	
4	This function can operate in QL-disabled mode	7.3.2	m	
5	The QL mode is provisionable via MI_QLmode	7.3.2	c1501	
6	In QL-enabled mode, bits 5 to 8 of byte S1 are recovered and accepted if the same code is present in three consecutive frames	7.3.2	c1502	
7	In QL-enabled mode, the accepted code is converted to a quality level QL[SSM] as specified in table 4 and is output via CI_QL	7.3.2, table 4	c1502	
8	In QL-enabled mode, if MI_SSMsupp is false, the received SSM code is ignored	7.3.2	c1503	
9	In QL-enabled mode, if MI_SSMsupp is false, CI_QL is forced to the QL–NSUPP	7.3.2	c1503	
10	In QL-disabled mode, the received SSM code is ignored	7.3.2	c1504	
11	In QL-disabled mode, the CI_QL is forced to the QL-NSUPP	7.3.2	c1504	
12	The function inserts the clock source identifier received via MI_CSid into CI_CS	7.3.2	c1505	
13	The function inserts the clock source identifier received via MI_CSid into RI_CS	7.3.2	c1505	

c1501: IF (D.15/3 AND D.15/4 AND D.14/3) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c1502: IF D.15/3 THEN m ELSE n/a -- QL-enabled mode supported.

c1503: IF (D.15/3 AND D.14/1) THEN m ELSE n/a -- QL-enabled mode supported and MI_SSMsupp supported.

c1504: IF D.15/4 THEN m ELSE n/a -- QL-disabled mode supported.

c1505: IF D.14/2 THEN m ELSE n/a -- MI_CSid supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.3.2.

D.4.3.2.3 Consequent Actions (MS16/SD_A_Sk)

Table D.16: Consequent actions (MS16/SD_A_Sk)

Item	Consequent actions (MS16/SD_A_Sk)	Reference	Status	Support
1	The function implements the following logical equation: aSSF ← AI_TSF	7.3.2	m	

D.4.4 P31s Adaptation Functions

D.4.4.1 P31s to SD Adaptation Source P31s/SD_A_So

Prerequisite: D.1/7 -- P31s/SD_A_So function exists.

D.4.4.1.1 Management information (P31s/SD_A_So)

Table D.17: Configuration/provisioning of information from EMF to P31s/SD_A_So

Item	Configuration/provisioning of information from EMF to P31s/SD_A_So	Reference	Status	Support
1	P31s/SD_A_So_MI_TMmode is provisionable from the EMF	7.4.1	m	
2	P31s/SD_A_So_MI_SSMdis is provisionable from the EMF	7.4.1	m	
3	P31s/SD_A_So_MI_Qlmode is provisionable from the EMF	7.4.1	m	

D.4.4.1.2 Processes (P31s/SD_A_So)

Table D.18: Mode selection process (P31s/SD_A_So)

Item	Mode selection process (P31s/SD_A_So)	Reference	Status	Support
1	This function can operate in QL-enabled mode	7.4.1	m	
2	This function can operate in QL-disabled mode	7.4.1	m	
3	The mode is provisionable via MI_QLmode	7.4.1	c1801	
4	This function can operate in four bits SSM mode	7.4.1, 4.3.4, ETS 300 337 [9] Rev. 1, subclause 5.1.2	o.1801	
5	This function can operate in one bit TM mode	7.4.1, 4.3.4, ETS 300 337 [9] Rev. 1, subclause 5.1.2	o.1801	
6	The mode is provisionable via MI_TMmode	7.4.1	c1802	
7	When TMmode is disabled the function generates the SSM code	7.4.1	c1803	
8	When TMmode is enabled the function generates the TM code	7.4.1	c1803	

o.1801: It is mandatory to support at least one of these items -- one between SSM and TM mode supported.

c1801: IF (D.18/2 AND D.18/1 AND D.17/3) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c1802: IF (D.18/4 AND D.18/5 AND D.17/1) THEN m ELSE n/a -- SSM and TM modes exist and MI_TMmode is supported.

c1803: IF D.17/1 THEN m ELSE n/a -- MI_TMmode is supported.

Table D.19: SSM coding and insertion in TM disabled mode (P31s/SD_A_So)

Prerequisite: D.18/4 -- SSM mode supported.

Item	SSM coding and insertion in TM disabled mode (P31s/SD_A_So)	Reference	Status	Support
1	In TM disabled mode, if in QL–enabled mode, this function converts the CI_QL and CI_SSF information into the 4 bit SSM code according to table 27	7.4.1, table 27	c1901	
2	In TM disabled mode, if in QL-enabled mode, when RI_CS equals CI_CS, the SSM value is forced to "1111" to avoid timing loop	7.4.1, ETS 300 337 [9]	c1901	
3	In TM disabled mode, if in QL-enabled mode, when MI_SSMdis is true, the function forces the SSM to the "1111" pattern	7.4.1	c1901	
4	In TM disabled mode, if in QL–disabled mode, the function forces the SSM to the "1111" pattern	7.4.1	c1902	
5	In TM disabled mode, the SSM is coded as a four-frame multiframed information in bit 8 of MA	7.4.1	m	
6	In TM disabled mode, the multiframe indicator is positioned in bits 6 and 7 of MA byte	7.4.1, ETS 300 337 [9]	m	
7	In TM disabled mode, the value of the multiframe indicator is as specified by ETS 300 337 [9], 500 µs TU multiframe sequence	7.4.1	m	
8	In TM disabled mode, the value of the multiframe indicator bits is aligned with P31s_TI_MFS	7.4.1	m	

c1901: IF D.18/1 THEN m ELSE n/a -- QL-enabled mode supported.

c1902: IF D.18/2 THEN m ELSE n/a -- QL-disabled mode supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.4.1.

Table D.20: TM coding and insertion in TM enabled mode (P31s/SD_A_So)

Prerequisite: D.18/5 -- TM mode supported.

Item	TM coding and insertion in TM enabled mode (P31s/SD_A_So)	Reference	Status	Support
1	In TM enabled mode, if in QL-enabled mode, this function converts the CI_QL and CI_SSF information into the 1 bit TM code according to table 27	7.4.1, table 27	c2001	
2	In TM enabled mode, if in QL-enabled mode, when RI_CS equals CI_CS, TM is forced to "1" to avoid timing loop	7.4.1, ETS 300 337 [9]	c2001	
3	In TM enabled mode, if in QL-enabled mode, when MI_SSMdis is true, the function forces the TM to the "1" pattern	7.4.1	c2001	
4	In TM enabled mode, if in QL–disabled mode, the function forces the TM to the "1" pattern	7.4.1	c2002	
5	In TM enabled mode, the TM information is coded as one bit information in bit 8 of byte MA	7.4.1, ETS 300 337 [9]	m	
6	In TM enabled mode, the multiframe indicator is not required	7.4.1, ETS 300 337 [9]	o	

c2001: IF D.18/1 THEN m ELSE n/a -- QL-enabled mode supported.

c2002: IF D.18/2 THEN m ELSE n/a -- QL-disabled mode supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.4.1.

D.4.4.2 P31s to SD Adaptation Sink P31s/SD_A_Sk

Prerequisite: D.1/8 -- P31s/SD_A_Sk function exists.

D.4.4.2.1 Management information (P31s/SD_A_Sk)

Table D.21: Configuration/provisioning of information from EMF to P31s/SD_A_Sk

Item	Configuration/provisioning of information from EMF to P31s/SD_A_Sk	Reference	Status	Support
1	P31s/SD_A_Sk_MI_TMmode is provisionable from the EMF	7.4.2	m	
2	P31s/SD_A_Sk_MI_SSMsupp is provisionable from the EMF	7.4.2	m	
3	P31s/SD_A_Sk_MI_QLmode is provisionable from the EMF	7.4.2	m	
4	P31s/SD_A_Sk_MI_CSid is provisionable from the EMF	7.4.2	m	

Table D.22: Signal reports from P31s/SD_A_Sk to EMF

Item	Signal reports from P31s/SD_A_Sk to EMF	Reference	Status	Support
1	P31s/SD_A_Sk_MI_cLOM is reported to the EMF	7.4.2	m	

D.4.4.2.2 Processes (P31s/SD_A_Sk)

Table D.23: Mode selection and generic process (P31s/SD_A_Sk)

Item	Mode selection process (P31s/SD_A_Sk)	Reference	Status	Support
1	This function can operate in QL-enabled mode	7.42	m	
2	This function can operate in QL-disabled mode	7.4.2	m	
3	The QL mode is provisionable via MI_QLmode	7.4.2	c2301	
4	This function can operate in four bits SSM mode	7.4.2, 4.3.4, ETS 300 337 [9] Rev. 1 subclause 5.1.2	o.2301	
5	This function can operate in one bit TM mode	7.4.2, 4.3.4, ETS 300 337 [9] Rev. 1, subclause 5.1.2	o.2301	
6	The TM mode is provisionable via MI_TMmode	7.4.2	c2302	
7	This functions supplies the timing signal, recovered by the physical section layer, to the synchronization distribution layer	7.4.2	m	
8	The function inserts the clock source identifier received via MI_CSid into CI_CS and RI_CS to support timing loop prevention as described in subclause 4.13.	7.4.2, 4.13	m	
9	When TMmode is disabled the function interprets bit 8 of byte MA as the SSM code	7.4.2	c2303	
10	When TMmode is enabled the function interprets bit 8 of byte MA as the TM code	7.4.2	c2303	

o.2301: It is mandatory to support at least one of these items -- one between SSM and TM mode supported.

c2301: IF (D.23/1 AND D.23/2 AND D.21/3) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c2302: IF (D.23/4 AND D.23/5 AND D.21/1) THEN m ELSE n/a -- SSM and TM modes exist and MI_TMmode is supported.

c2303: IF D.21/1 THEN m ELSE n/a -- MI_TMmode is supported.

Table D.24: SSM extraction and process in TM disabled mode (P31s/SD_A_Sk)

Prerequisite: D.23/4 -- SSM mode supported.

Item	SSM extraction and process in TM disabled mode (P31s/SD_A_Sk)	Reference	Status	Support
1	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, the function recovers the 500 µs (multi)frame start phase performing multi-frame alignment on bits 6 and 7 of byte MA	7.4.2	c2401	
2	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, Out-of-multiframe (OOM) is assumed to be lost once when an error is detected in the MA bit 6 and 7 sequence	7.4.2	c2401	
3	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, Multiframe alignment is assumed to be recovered, when in four consecutive P31s frames an error free MA sequence is found	7.4.2	c2401	
4	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, bit 8 of byte MA in a four frame multiframe is recovered and accepted if the same code is present in three consecutive 4 bit multiframes	7.4.2	c2401	
5	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, the accepted code is converted to a quality level QL[SSM] as specified in table 4 and is output via CI_QL	7.4.2, table 4	c2401	
6	In TM disabled mode, if MI_SSMsupp is false, the received SSM code is ignored and CI_QL is forced to the QL-NSUPP	7.4.2	c2402	
7	In TM disabled mode, if in QL–disabled mode, the received SSM code is ignored and CI_QL is forced to the QL-NSUPP	7.4.2	c2403	

c2401: IF (D.23/1 AND D.21/2) THEN m ELSE n/a -- QL-enabled mode and MI_SSMsupp supported.

c2402: IF D.21/2 THEN m ELSE n/a -- MI_SSMsupp supported.

c2403: IF D.23/2 THEN m ELSE n/a -- QL-disabled mode.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.4.2.

Table D.25: TM extraction and process in TM enabled mode (P31s/SD_A_Sk)

Prerequisite: D.23/5 -- TM mode supported.

Item	TM extraction and process in TM enabled mode (P31s/SD_A_Sk)	Reference	Status	Support
1	In TM enabled mode, if in QL-enabled mode, when SSMsupp is true, bit 8 of byte MA is recovered and accepted if the same code is present in three consecutive frames	7.4.2	c2501	
2	In TM enabled mode, if in QL-enabled mode, when SSMsupp is true, the accepted code is converted to a quality level QL[TM] as specified in table 4 and is output via CI_QL	7.4.2, table 4	c2501	
3	In TM enabled mode, if MI_SSMsupp is false, the received TM code is ignored and CI_QL is forced to the QL-NSUPP	7.4.2	c2502	
4	In TM enabled mode, if in QL-disabled mode, the received TM code is ignored and CI_QL is forced to the QL–NSUPP	7.4.2	c2503	

c2501: IF (D.23/1 AND D.21/2) THEN m ELSE n/a -- QL-enabled mode and MI_SSMsupp supported.

c2502: IF D.21/2 THEN m ELSE n/a -- MI_SSMsupp supported.

c2503: IF D.23/2 THEN m ELSE n/a -- QL-disabled mode supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.4.2.

D.4.4.2.3 Defects (P31s/SD_A_Sk)

Prerequisite: D.23/4 -- SSM mode supported.

Table D.26: dLOM defect (P31s/SD_A_Sk)

Item	dLOM defect (P31s/SD_A_Sk)	Reference	Status	Support
1	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, if the multiframe alignment process is in the OOM state and the MA[6-7] multiframe is not recovered within X ms, a dLOM defect is declared	7.4.2	c2601	
2	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, once in a dLOM state, this state is exited when the multiframe is recovered (multiframe alignment process enters the IM state)	7.4.2	c2601	
3	dLOM is cleared when QLmode is disabled	7.4.2	c2602	
4	dLOM is cleared when SSMsupp is false	7.4.2	c2603	
5	dLOM is cleared when TMmode is enabled	7.4.2	c2604	

c2601: IF (D.23/1 AND D.21/2) THEN m ELSE n/a -- QL-enabled mode and MI_SSMsupp supported.

c2602: IF D.23/3 THEN m ELSE n/a -- QLmode is provisionable.

c2603: IF D.21/2 THEN m ELSE n/a -- MI_SSMsupp supported.

c2604: IF D.23/6 THEN m ELSE n/a -- TMmode is provisionable.

Table D.27: dLOM parameter value (P31s/SD_A_Sk)

Item	dLOM parameter value (P31s/SD_A_Sk)	Reference	Status	Support	Values	
					Allowed	Supported
1	Delay to declare dLOM in OOM state (X) (in ms)	7.4.2	m		1<X<5	

D.4.4.2.4 Consequent Actions (P31s/SD_A_Sk)

Table D.28: Consequent Actions (P31s/SD_A_Sk)

Item	Consequent Actions (P31s/SD_A_Sk)	Reference	Status	Support
1	The function implements the following logical equation: aSSF <-- dLOM or AI_TSF	7.4.2	m	

D.4.4.2.5 Defect Correlation (P31s/SD_A_Sk)

Table D.29: Defect correlation (P31s/SD_A_Sk)

Item	Defect correlation (P31s/SD_A_Sk)	Reference	Status	Support
1	The function implements the following logical equation: cLOM <-- dLOM and (not AI_TSF)	7.4.2	m	

D.4.5 P4s Adaptation Functions

D.4.5.1 P4s to SD Adaptation Source P4s/SD_A_So

Prerequisite: D.1/9 -- P4s/SD_A_So function exists.

D.4.5.1.1 Management information (P4s/SD_A_So)

Table D.30: Configuration/provisioning of information from EMF to P4s/SD_A_So

Item	Configuration/provisioning of information from EMF to P4s/SD_A_So	Reference	Status	Support
1	P4s/SD_A_So_MI_TMmode is provisionable from the EMF	7.5.1	m	
2	P4s/SD_A_So_MI_SSMdis is provisionable from the EMF	7.5.1	m	
3	P4s/SD_A_So_MI_QLmode is provisionable from the EMF	7.5.1	m	

D.4.5.1.2 Processes (P4s/SD_A_So)

Table D.31: Mode selection process (P4s/SD_A_So)

Item	Mode selection process (P4s/SD_A_So)	Reference	Status	Support
1	This function can operate in QL-enabled mode	7.5.1	m	
2	This function can operate in QL-disabled mode	7.5.1	m	
3	The mode is provisionable via MI_QLmode	7.5.1	c3101	
4	This function can operate in four bits SSM mode	7.5.1, 4.3.4, ETS 300 337 [9] Rev. 1, subclause 6.1.2	o.3101	
5	This function can operate in one bit TM mode	7.5.1, 4.3.4, ETS 300 337 [9] Rev. 1, subclause 6.1.2	o.3101	
6	The mode is provisionable via MI_TMmode	7.5.1	c3102	
7	When TMmode is disabled the function generates the SSM code	7.5.1	c3103	
8	When TMmode is enabled the function generates the TM code	7.5.1	c3103	

o.3101: It is mandatory to support at least one of these items -- one between SSM and TM mode supported.

c3101: IF (D.31/1 AND D.31/2 AND D.30/3)THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c3102: IF (D.31/4 AND D.31/5 AND D.30/1)THEN m ELSE n/a -- SSM and TM modes exist and MI_TMmode is supported.

c3103: IF D.30/1 THEN m ELSE n/a -- MI_TMmode is supported.

Table D.32: SSM coding and insertion in TM disabled mode (P4s/SD_A_So)

Prerequisite: D.31/4 -- SSM mode supported.

Item	SSM coding and insertion in TM disabled mode (P4s/SD_A_So)	Reference	Status	Support
1	In TM disabled mode, if in QL–enabled mode, this function converts the CI_QL and CI_SSF information into the 4 bit SSM code according to table 30	7.5.1, table 30	c3201	
2	In TM disabled mode, if in QL–enabled mode, when RI_CS equals CI_CS, SSM is forced to "1111" to avoid timing loop	7.5.1, ETS 300 337 [9]	c3201	
3	In TM disabled mode, if in QL-enabled mode, when MI_SSMdis is true, the function forces the SSM to the "1111" pattern	7.5.1	c3201	
4	In TM disabled mode, if in QL–disabled mode, the function forces the SSM to the "1111"pattern	7.5.1	c3202	
5	In TM disabled mode, the SSM is coded as a four-frame multiframed information in bit 8 of MA	7.5.1	m	
6	In TM disabled mode, the multiframe indicator is positioned in bits 6 and 7 of MA byte.	7.5.1	m	
7	In TM disabled mode, the value of the multiframe is as specified by ETS 300 337 [9], 500 µs TU multiframe sequence	7.5.1	m	
8	In TM disabled mode, the value of the multiframe indicator bits is aligned with P4s_TI_MFS	7.5.1	m	

c3201: IF D.31/1 THEN m ELSE n/a -- QL-enabled mode supported.

c3202: IF D.31/2 THEN m ELSE n/a -- QL-disabled mode supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.5.1.

Table D.33: TM coding and insertion in TM enabled mode (P4s/SD_A_So)

Prerequisite: D.31/5 -- TM mode supported.

Item	TM coding and insertion in TM enabled mode (P4s/SD_A_So)	Reference	Status	Support
1	In TM enabled mode, if in QL-enabled mode, this function converts the CI_QL and CI_SSF information into the 1 bit TM code according to table 30	7.5.1, table 30	c3301	
2	In TM enabled mode, if in QL-enabled mode, when RI_CS equals CI_CS, the TM value is forced to "1" to avoid timing loop	7.5.1, ETS 300 337 [9]	c3301	
3	In TM enabled mode, if in QL-enabled mode, when MI_SSMdis is true, the function forces the TM to the "1" pattern	7.5.1	c3301	
4	In TM enabled mode, if in QL–disabled mode, the function forces the TM to the "1" pattern	7.5.1	c3302	
5	In TM enabled mode, the TM is coded as one bit information in bit 8 of MA.	7.5.1	m	
6	In TM enabled mode, the multiframe indicator is not required	7.5.1, ETS 300 337 [9]	o	

c3301: IF D.31/1 THEN m ELSE n/a -- QL-enabled mode supported.

c3302: IF D.31/2 THEN m ELSE n/a -- QL-disabled mode supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.5.1.

D.4.5.2 P4s to SD Adaptation Sink P4s/SD_A_Sk

Prerequisite: D.1/10 -- P4s/SD_A_Sk function exists.

D.4.5.2.1 Management information (P4s/SD_A_Sk)

Table D.34: Configuration/provisioning of information from EMF to P4s/SD_A_Sk

Item	Configuration/provisioning of information from EMF to P4s/SD_A_Sk	Reference	Status	Support
1	P4s/SD_A_Sk_MI_TMmode is provisionable from the EMF	7.5.2	m	
2	P4s/SD_A_Sk_MI_SSMsupp is provisionable from the EMF	7.5.2	m	
3	P4s/SD_A_Sk_MI_QLmode is provisionable from the EMF	7.5.2	m	
4	P4s/SD_A_Sk_MI_CSid is provisionable from the EMF	7.5.2	m	

Table D.35: Signal reports from P4s/SD_A_Sk to EMF

Item	Signal reports from P4s/SD_A_Sk to EMF	Reference	Status	Support
1	P4s/SD_A_Sk_MI_cLOM is reported to the EMF	7.5.2	m	

D.4.5.2.2 Processes (P4s/SD_A_Sk)

Table D.36: mode selection and generic process (P4s/SD_A_Sk)

Item	mode selection process (P4s/SD_A_Sk)	Reference	Status	Support
1	This function can operate in QL-enabled mode	7.5.2	m	
2	This function can operate in QL-disabled mode	7.5.2	m	
3	The mode is provisionable via MI_QLmode	7.5.2	c3601	
4	This function can operate in four bits SSM mode	7.5.2, 4.3.4, ETS 300 337 [9], Rev. 1, subclause 6.1.2	o.3601	
5	This function can operate in one bit TM mode	7.5.2, 4.3.4, ETS 300 337 [9] Rev. 1, subclause 6.1.2	o.3601	
6	The TM mode is provisionable via MI_TMmode	7.5.2	c3602	
7	This functions supplies the timing signal, recovered by the physical section layer, to the synchronization distribution layer	7.5.2	m	
8	The function inserts the clock source identifier received via MI_CSid into CI_CS and RI_CS to support timing loop prevention as described in subclause 4.13	7.5.2, 4.13	c3603	
9	When TMmode is disabled the function interprets bit 8 of byte MA as the SSM code	7.5.2	c3604	
10	When TMmode is enabled the function interprets bit 8 of byte MA as the TM code	7.5.2	c3604	

o.3601: It is mandatory to support at least one of these items -- one between SSM and TM mode supported.

c3601: IF (D.36/1 AND D.36/2 AND D.34/3) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c3602: IF (D.36/4 AND D.36/5 AND D.34/1) THEN m ELSE n/a -- SSM and TM modes exist and MI_TMmode is supported.

c3603: IF D.34/4 THEN m ELSE n/a -- MI_CSid is supported.

c3604: IF D.34/1 THEN m ELSE n/a -- MI_TMmode is supported.

Table D.37: SSM extraction and process in TM disabled mode (P4s/SD_A_Sk)

Prerequisite: D.36/4 -- SSM mode supported.

Item	SSM extraction and process in TM disabled mode (P4s/SD_A_Sk)	Reference	Status	Support
1	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, the function recovers the 500 µs (multi)frame start phase performing multi-frame alignment on bits 6 and 7 of byte MA	7.5.2	c3701	
2	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, Out-of-multiframe (OOM) is assumed to be lost once when an error is detected in the MA bit 6 and 7 sequence	7.5.2	c3701	
3	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, multiframe alignment is assumed to be recovered, when in four consecutive P4s frames an error free MA sequence is found	7.5.2	c3701	
4	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, bit 8 of byte MA in a four frame multiframe is recovered and accepted if the same code is present in three consecutive 4 bit multiframes	7.5.2	c3701	
5	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, the accepted code is converted to a quality level QL[SSM] as specified in table 4 and is output via CI_QL	7.5.2, table 4	c3701	
6	In TM disabled mode, if MI_SSMsupp is false, the received SSM code is ignored and CI_QL is forced to the QL-NSUPP	7.5.2	c3702	
7	In TM disabled mode, if in QL–disabled mode, the received SSM code is ignored and CI_QL is forced to the QL-NSUPP	7.5.2	c3703	

c3701: IF (D.36/1 AND D.34/2) THEN m ELSE n/a -- QL-enabled mode and MI_SSMsupp supported.

c3702: IF D.34/2 THEN m ELSE n/a -- MI_SSMsupp supported.

c3703: IF D.36/2 THEN m ELSE n/a -- QL-disabled mode.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.5.2.

Table D.38: TM extraction and process in TM enabled mode (P4s/SD_A_Sk)

Prerequisite: D.36/5 -- TM mode supported.

Item	TM extraction and process in TM enabled mode (P4s/SD_A_Sk)	Reference	Status	Support
1	In TM enabled mode, if in QL-enabled mode, when SSMsupp is true, bit 8 of byte MA is recovered and accepted if the same code is present in three consecutive frames	7.5.2	c3801	
2	In TM enabled mode, if in QL-enabled mode, when SSMsupp is true, the accepted code is converted to a quality level QL[TM] as specified in table 4 and is output via CI_QL	7.5.2, table 4	c3801	
3	In TM enabled mode, if MI_SSMsupp is false, the received TM code is ignored and CI_QL is forced to the QL-NSUPP.	7.5.2	c3802	
4	In TM enabled mode, if in QL–disabled mode, the received TM code is ignored and CI_QL is forced to the QL-NSUPP	7.5.2	c3803	

c3801: IF (D.36/1 AND D.34/2) THEN m ELSE n/a -- QL-enabled mode and MI_SSMsupp supported.

c3802: IF D.34/2 THEN m ELSE n/a -- MI_SSMsupp supported.

c3803: IF D.36/2 THEN m ELSE n/a -- QL-disabled mode supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.5.2.

D.4.5.2.3 Defects (P4s/SD_A_Sk)

Prerequisite D.36/4 -- SSM mode supported.

Table D.39: dLOM defect (P4s/SD_A_Sk)

Item	dLOM defect (P4s/SD_A_Sk)	Reference	Status	Support
1	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, if the multiframe alignment process is in the OOM state and the MA[6-7] multiframe is not recovered within X ms, a dLOM defect is declared	7.5.2	c3901	
2	In TM disabled mode, if in QL–enabled mode, when SSMsupp is true, once in a dLOM state, this state is exited when the multiframe is recovered (multiframe alignment process enters the IM state)	7.5.2	c3901	
3	dLOM is cleared when QLmode is disabled	7.5.2	c3902	
4	dLOM is cleared when SSMsupp is false	7.5.2	c3903	
5	dLOM is cleared when TMmode is enabled	7.5.2	c3904	

c3901: IF (D.36/1 AND D.34/2) THEN m ELSE n/a -- QL-enabled mode and MI_SSMsupp supported.

c3902: IF D.36/3 THEN m ELSE n/a -- QLmode is provisionable.

c3903: IF D.34/2 THEN m ELSE n/a -- MI_SSMsupp supported.

c3904: IF D.36/6 THEN m ELSE n/a -- TMmode is provisionable.

Table D.40: dLOM parameter value (P4s/SD_A_Sk)

Item	dLOM parameter value (P4s/SD_A_Sk)	Reference	Status	Support	Values	
					Allowed	Supported
1	Delay to declare dLOM in OOM state (X) (in ms)	7.5.2	m		1 < X < 5	

D.4.5.2.4 Consequent actions (P4s/SD_A_Sk)

Table D.41: Consequent actions (P4s/SD_A_Sk)

Item	Consequent actions (P4s/SD_A_Sk)	Reference	Status	Support
1	The function implements the following logical equation: aSSF <-- dLOM or AI_TSF	7.5.2	m	

D.4.5.2.5 Defect correlation (P4s/SD_A_Sk)

Table D.42: Defect correlation (P4s/SD_A_Sk)

Item	Defect correlation (P4s/SD_A_Sk)	Reference	Status	Support
1	The function implements the following logical equation: cLOM <-- dLOM and (not AI_TSF)	7.5.2	m	

D.4.6 P12s Layer Adaptation Functions

D.4.6.1 P12s Layer Adaptation Source Functions

D.4.6.1.1 Type 1 P12s to SD Adaptation Source for station clock output supporting SSM P12s/SD-sc-1_A_So

Prerequisite: D.1/11 -- P12s/SD-sc-1_A_So function exists.

D.4.6.1.1.1 Management information (P12s/SD-sc-1_A_So)

Table D.43: Configuration/provisioning of information from EMF to P12s/SD-sc-1_A_So

Item	Configuration/provisioning of information from EMF to P12s/SD-sc-1_A_So	Reference	Status	Support
1	P12s/SD-sc-1_A_So_MI_SelSaSSM is provisionable from the EMF	7.6.1.1, G.704	m	
2	P12s/SD-sc-1_A_So_MI_QLmode is provisionable from the EMF	7.6.1.1	m	
3	P12s/SD-sc-1_A_So_MI_SSMsupp is provisionable from the EMF	7.6.1.1	m	
4	P12s/SD-sc-1_A_So_MI_QLminimum is provisionable from the EMF	7.6.1.1, table 33	m	

D.4.6.1.1.2 Processes (P12s/SD-sc-1_A_So)

Table D.44: General processes (P12s/SD-sc-1_A_So)

Item	General processes (P12s/SD-sc-1_A_So)	Reference	Status	Support
1	This function converts the CI_QL and CI_SSF information into the 4 bit SSM code transmitted in one of the five S_a bits, as defined in ITU-T Recommendation G.704	7.6.1.1, G.704	m	
2	This function converts the CI_QL and CI_SSF information into an AISinsert control signal	7.6.1.1	m	
3	This function can operate in QL–enabled mode	7.6.1.1	m	
4	This function can operate in QL–disabled mode	7.6.1.1	m	
5	The mode is provisionable via MI_QLmode	7.6.1.1	c4401	
6	The 4 bit SSM code is inserted in one of the Sa bits (S_{ax}, x = 4 ... 8)	7.6.1.1	m	
7	The bit which is used is provisionable via MI_SelSaSSM.	7.6.1.1	c4402	
8	The four bit SSM code is transported in alignment with the CRC-4 submultiframe	7.6.1.1	m	
9	The function inserts the clock source identifier RI_CS	7.6.1.1, 4.13	m	
10	The function inserts the clock quality level RI_QL	7.6.1.1, 4.13	m	

c4401: IF (D.44/3 AND D.44/4 AND D.43/2)THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c4402: IF D.43/1 THEN m ELSE n/a -- MI_SelSaSSM is supported.

Table D.45: Clock source identifier and quality level processing (P12s/SD-sc-1_A_So)

Item	Clock source identifier and quality level processing (P12s/SD-sc-1_A_So)	Reference	Status	Support
1	In QL-enabled mode, if MI_SSMsupp is true, then the four bit SSM is set to "1111"	7.6.1.1	c4501	
2	In QL-enabled mode, if MI_SSMsupp is true, then RI_QL is set to "QL–NSUPP"	7.6.1.1	c4501	
3	In QL-enabled mode, if MI_SSMsupp is true and if CI_SSF is true OR CI_QL is below MI_QLminimum, then RI_CS is set to "none"	7.6.1.1	c4502	
4	In QL-enabled mode, if MI_SSMsupp is true and if CI_SSF is false AND CI_QL is greater or equal to MI_QLminimum, then RI_CS is set to CI_CS	7.6.1.1	c4502	
5	In QL-enabled mode, if MI_SSMsupp is false and CI_SSF is true, then the four bit SSM is set to "1111"	7.6.1.1	c4501	
6	In QL-enabled mode, if MI_SSMsupp is false and CI_SSF is true, then RI_CS is set to "none" and RI_QL is set to "QL-DNU"	7.6.1.1	c4501	
7	In QL-enabled mode, if MI_SSMsupp is false and CI_SSF is false, then the four bit SSM is generated depending on the input CI_QL in accordance with table 33	7.6.1.1, table 33	c4501	
8	In QL-enabled mode, if MI_SSMsupp is false and CI_SSF is false, then RI_CS is set to CI_CS and RI_QL is set to CI_QL	7.6.1.1	c4501	
9	In QL-disabled mode, the four bit SSM is set to "1111"	7.6.1.1	c4503	
10	In QL-disabled mode, RI_QL is set to QL-NSUPP	7.6.1.1	c4503	
11	In QL-disabled mode, if CI_SSF is true then RI_CS is set to "none"	7.6.1.1	c4503	
12	In QL-disabled mode, if CI_SSF is false then RI_CS is set to CI_CS	7.6.1.1	c4503	

c4501: IF (D.44/3 AND D.43/3) THEN m ELSE n/a -- QL-enabled mode and MI_SSMsupp supported.

c4502: IF (D.44/3 AND D.43/3 AND D.43/4) THEN m ELSE n/a -- QL-enabled mode, MI_SSMsupp and MI_QLminimum supported.

c4503: IF D.44/4 THEN m ELSE n/a -- QL-disabled mode supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.6.1.1.

D.4.6.1.1.3 Consequent actions (P12s/SD-sc-1_A_So)

Table D.46: Consequent action AI_AISinsert (P12s/SD-sc-1_A_So)

Item	Consequent action AI_AISinsert (P12s/SD-sc-1_A_So)	Reference	Status	Support
1	In QL-enabled mode, if MI_SSMsupp is true and if CI_SSF is true OR CI_QL is below MI_QLminimum, then AI_AISinsert is set to true	7.6.1.1	c4601	
2	In QL-enabled mode, if MI_SSMsupp is true and if CI_SSF is false AND CI_QL is greater or equal to MI_QLminimum, then AI_AISinsert is set to false	7.6.1.1	c4601	
3	In QL-enabled mode, if MI_SSMsupp is false, then AI_AISinsert is set to false	7.6.1.1	c4602	
4	In QL-disabled mode, if CI_SSF is true, then AI_AISinsert is set to true	7.6.1.1	c4603	
5	In QL-disabled mode, if CI_SSF is false, then AI_AISinsert is set to false	7.6.1.1	c4603	

c4601: IF (D.44/3 AND D.43/3 AND D.43/4) THEN m ELSE n/a -- QL-enabled mode, MI_SSMsupp and MI_QLminimum supported.

c4602: IF (D.44/3 AND D.43/3) THEN m ELSE n/a -- QL-enabled mode and MI_SSMsupp supported.

c4603: IF D.44/4 THEN m ELSE n/a -- QL-disabled mode supported.

D.4.6.1.2 Type 2 P12s to SD Adaptation Source for station clock output port not supporting SSM P12s/SD-sc-2_A_So

Prerequisite: D.1/12 -- P12s/SD-sc-2_A_So function exists.

D.4.6.1.2.1 Management information (P12s/SD-sc-2_A_So)

Table D.47: Configuration/provisioning of information from EMF to P12s/SD-sc-2_A_So

Item	Configuration/provisioning of information from EMF to P12s/SD-sc-2_A_So	Reference	Status	Support
1	P12s/SD-sc-2_A_So_MI_QLminimum is provisionable from the EMF	7.6.1.2	m	
2	P12s/SD-sc-2_A_So_MI_QLmode is provisionable from the EMF	7.6.1.2	m	

D.4.6.1.2.2 Processes (P12s/SD-sc-2_A_So)

Table D.48: General processes (P12s/SD-sc-2_A_So)

Item	General processes (P12s/SD-sc-2_A_So)	Reference	Status	Support
1	This function converts the CI_QL and CI_SSF information into an AISinsert control signal	7.6.1.2	m	
2	This function can operate in QL–enabled mode	7.6.1.2	m	
3	This function can operate in QL–disabled mode	7.6.1.2	m	
4	The mode is provisionable via MI_QLmode	7.6.1.2	c4801	
5	The function inserts the clock source identifier into RI_CS	7.6.1.2	m	
6	RI_QL is set to QL-NSUPP	7.6.1.2	m	
7	In QL-enabled mode, if CI_SSF is true OR CI_QL is below MI_QLminimum, then RI_CS is set to "none"	7.6.1.2	c4802	
8	In QL-enabled mode, if CI_SSF is false AND CI_QL is greater or equal to MI_QLminimum, then RI_CS is set to CI_CS	7.6.1.2	c4802	
9	In QL-disabled mode, if CI_SSF is true, then RI_CS is set to "none"	7.6.1.2	c4803	
10	In QL-disabled mode, if CI_SSF is false, then RI_CS is set to CI_CS	7.6.1.2	c4803	

c4801: IF (D.48/2 AND D.48/3 AND D.47/2)THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c4802: IF (D.48/2 AND D.47/1) THEN m ELSE n/a -- QL-enabled mode and MI_QLminimum supported.

c4803: IF D.48/3 THEN m ELSE n/a -- QL-disabled mode supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.6.1.2.

D.4.6.1.2.3 Consequent actions (P12s/SD-sc-2_A_So)

Table D.49: Consequent action AI_AISinsert (P12s/SD-sc-2_A_So)

Item	Consequent actions AI_AISinsert (P12s/SD-sc-2_A_So)	Reference	Status	Support
1	In QL-enabled mode, if CI_SSF is true OR CI_QL is below MI_QLminimum, AI_AISinsert is set to true	7.6.1.2	c4901	
2	In QL-enabled mode, if CI_SSF is false AND CI_QL is greater or equal to MI_QLminimum, then AI_AISinsert is set to false	7.6.1.2	c4901	
3	In QL-disabled mode, if CI_SSF is true AI_AISinsert is set to true	7.6.1.2	c4902	
4	In QL-disabled mode, if CI_SSF is false, then AI_AISinsert is set to false	7.6.1.2	c4902	

c4901: IF (D.48/2 AND D.47/1) THEN m ELSE n/a -- QL-enabled mode and MI_QLminimum supported.

c4902: IF D.48/3 THEN m ELSE n/a -- QL-disabled mode supported.

D.4.6.2 P12s Layer Adaptation Sink Functions

D.4.6.2.1 Type 1 P12s to SD Adaptation Sink for traffic input port P12s/SD-tf_A_Sk

Prerequisite: D.1/13 -- P12s/SD-tf_A_Sk function supported.

D.4.6.2.1.1 Management information (P12s/SD-tf_A_Sk)

Table D.50: Configuration/provisioning of information from EMF to P12s/SD-tf_A_Sk

Item	Configuration/provisioning of information from EMF to P12s/SD-tf_A_Sk	Reference	Status	Support
1	P12s/SD-tf_A_Sk_MI_CSid is provisionable from the EMF	7.6.2.1	m	
2	P12s/SD-tf_A_Sk_MI_SSMsupp is provisionable from the EMF	7.6.2.1	m	
3	P12s/SD-tf_A_Sk_MI_SelSaSSM is provisionable from the EMF	7.6.2.1	m	
4	P12s/SD-tf_A_Sk_MI_QLmode is provisionable from the EMF	7.6.2.1	m	

D.4.6.2.1.2 Processes (P12s/SD-tf_A_Sk)

Table D.51: Processes (P12s/SD-tf_A_Sk)

Item	Processes (P12s/SD-tf_A_Sk)	Reference	Status	Support
1	This function can operate in QL–enabled mode	7.6.2.1	m	
2	This function can operate in QL–disabled mode	7.6.2.1	m	
3	The mode is provisionable via MI_QLmode	7.6.2.1	c5101	
4	This functions supplies the timing signal, recovered by the physical section layer, to the synchronization distribution layer	7.6.2.1	m	
5	When MI_SSMsupp is false the received SSM code is ignored and the CI_QL is set to "QL-NSUPP"	7.6.2.1	c5102	
6	In QL-enabled mode, if MI_SSMsupp is true, the bits S_{ax} are selected by the value of MI_SelSaSSM (x is a value in the set [4, 5, 6, 7, 8])	7.6.2.1	c5103	
7	In QL-enabled mode, if MI_SSMsupp is true, the 4 bit Synchronization Status Message (SSM), transmitted via one of the S_a bits, is recovered and accepted if the same code is present in three consecutive frames.	7.6.2.1	c5104	
8	In QL-enabled mode, if MI_SSMsupp is true, the accepted code is converted to a quality level QL[SSM] as specified in table 4 and is output via CI_QL	7.6.2.1, table 4	c5104	
9	In QL-disabled mode, the received SSM code is ignored and the CI_QL is set to "QL-NSUPP"	7.6.2.1	c5105	
10	The function inserts the clock source identifier received via MI_CSid into CI_CS to support timing loop prevention as described in subclause 4.13	7.6.2.1, 4.13	c5106	
11	RI_CS generation is for further study	7.6.2.1	n/a	

c5101: IF (D.51/1 AND D.51/2 AND D.50/4) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c5102: IF D.50/2 THEN m ELSE n/a -- MI_SSMsupp is supported.

c5103: IF (D.51/1 AND D.50/2 AND D.50/3) THEN m ELSE n/a -- QL-enabled mode, MI_ SSMsupp and MI_SelSaSSM supported.

c5104: IF (D.51/1 AND D.50/2) THEN m ELSE n/a -- QL-enabled mode and MI_ SSMsupp supported.

c5105: IF D.51/2 THEN m ELSE n/a -- QL-disabled mode is supported.

c5106: IF D.50/1 THEN m ELSE n/a -- MI_CSid is supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.6.2.1.

D.4.6.2.1.3 Consequent actions (P12s/SD-tf_A_Sk)

Table D.52: Consequent action aSSF (P12s/SD-tf_A_Sk)

Item	Consequent action aSSF (P12s/SD-tf_A_Sk)	Reference	Status	Support
1	The function implements the following logical equation: aSSF <-- AI_TSF or (AI_MFP == "false" and QLmode == "enabled" and SSMsupp == "true")	7.6.2.1	c5201	

c5201: IF (D.51/1 AND D.50/2) THEN m ELSE n/a -- QL-enabled mode and MI_ SSMsupp supported.

D.4.6.2.2 Type 2 P12s to SD Adaptation Sink for station clock input port P12s/SD-sc_A_Sk

Prerequisite: D.1/14 -- P12s/SD-sc_A_Sk function supported.

D.4.6.2.2.1 Management information (P12s/SD-sc_A_Sk)

Table D.53: Configuration/provisioning of information from EMF to P12s/SD-sc_A_Sk

Item	Configuration/provisioning of information from EMF to P12s/SD-sc_A_Sk	Reference	Status	Support
1	P12s/SD-sc_A_Sk_MI_SSMsupp is provisionable from the EMF	7.6.2.2	m	
2	P12s/SD-sc_A_Sk_MI_CSid is provisionable from the EMF	7.6.2.2	m	
3	P12s/SD-sc_A_Sk_MI_SelSaSSM is provisionable from the EMF	7.6.2.2	m	
4	P12s/SD-sc_A_Sk_MI_QLmode is provisionable from the EMF	7.6.2.2	m	

D.4.6.2.2.2 Processes (P12s/SD-sc_A_Sk)

Table D.54: Processes (P12s/SD-sc_A_Sk)

Item	Processes (P12s/SD-sc_A_Sk)	Reference	Status	Support
1	This function can operate in QL–enabled mode	7.6.2.2	m	
2	This function can operate in QL–disable mode	7.6.2.2	m	
3	The mode is provisionable via MI_QLmode	7.6.2.2	c5401	
4	This functions supplies the timing signal, recovered by the physical section layer, to the synchronization distribution layer	7.6.2.2	m	
5	When MI_SSMsupp is false, the received SSM code is ignored and the CI_QL is set to "QL-NSUPP"	7.6.2.2	c5402	
6	In QL-enabled mode, if SSMsupp is true, the S_{ax} bits to be recovered are selected by the value of MI_SelSaSSM	7.6.2.2	c5403	
7	In QL-enabled mode and if SSMsupp is true, the four bit Synchronization Status Message (SSM), transmitted via one of the S_a bits, is recovered and accepted if the same code is present in three consecutive frames	7.6.2.2	c5404	
8	In QL-enabled mode and if SSMsupp is true, the accepted code is converted to a quality level QL[SSM] as specified in table 4 and is output via CI_QL	7.6.2.2, table 4	c5404	
9	In QL-disabled mode, the received SSM code is ignored and the CI_QL is forced to the value "QL-NSUPP"	7.6.2.2	c5405	
10	The function processes the clock source identifier received via RI_CS to support timing loop prevention as described in subclause 4.13.	7.6.2.2	m	
11	If RI_CS is equal to "none", then the CI_CS is set to MI_CSid	7.6.2.2	c5406	
12	When RI_CS is different from "none", if MI_SSMsupp is true AND MI_QLMode is enabled, and if RI_QL is equal to CI_QL OR to "QL–NSUPP", then CI_CS is set to RI_CS	7.6.2.2	c5404	
13	When RI_CS is different from "none", if MI_SSMsupp is true AND MI_QLMode is enabled, and if RI_QL is different from CI_QL OR from "QL–NSUPP", then CI_CS is set to MI_CSid	7.6.2.2	c5407	
14	If RI_CS is different from "none", if MI_SSMsupp is false OR MI_QLMode is disabled, then CI_CS is set to RI_CS	7.6.2.2	c5408	
15	RI_CS generation is for further study	7.6.2.2	n/a	

c5401: IF (D.54/1 AND D.54/2 AND D.53/2) THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c5402: IF D.53/4 THEN m ELSE n/a -- MI_SSMsupp is supported.

c5403: IF (D.54/1 AND D.53/4 AND D.53/3) THEN m ELSE n/a -- QL-enabled mode, MI_ SSMsupp and MI_SelSaSSM supported.

c5404: IF (D.54/1 AND D.53/4) THEN m ELSE n/a -- QL-enabled mode and MI_ SSMsupp supported.

c5405: IF D.54/2 THEN m ELSE n/a -- QL-disabled mode is supported.

c5406: IF D.53/1 THEN m ELSE n/a -- MI_CSid is supported.

c5407: IF (D.54/1 AND D.53/4 AND D.53/1) THEN m ELSE n/a -- QL-enabled mode, MI_ SSMsupp and MI_CSid supported.

c5408: IF (D.54/2 AND D.53/4) THEN m ELSE n/a -- QL-disabled mode and MI_ SSMsupp supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.6.2.2.

D.4.6.2.2.3 Consequent actions (P12s/SD-sc_A_Sk)

Table D.55: Consequent action aSSF (P12s/SD-sc_A_Sk)

Item	Consequent action aSSF (P12s/SD-sc_A_Sk)	Reference	Status	Support
1	The function implements the following logical equation: aSSF <-- AI_TSF or (AI_MFP == "false" and QLmode == "enabled" and SSMsupp == "true")	7.6.2.2	c5501	

c5501: IF (D.54/1 AND D.53/4) THEN m ELSE n/a -- QL-enabled mode and MI_ SSMsupp supported.

D.4.7 T12 Layer Adaptation Functions

D.4.7.1 T12 to SD Adaptation Source T12/SD_A_So

Prerequisite: D.1/15 -- T12/SD_A_So function exists.

D.4.7.1.1 Management Information (T12/SD_A_So)

Table D.56: Configuration/provisioning of information from EMF to T12/SD_A_So

Item	Configuration/provisioning of information from EMF to T12/SD_A_So	Reference	Status	Support
1	T12/SD_A_So_MI_QLmode is provisionable from the EMF	7.7.1	m	
2	T12/SD_A_So_MI_QLminimum is provisionable from the EMF	7.7.1	m	

D.4.7.1.2 Processes (T12/SD_A_So)

Table D.57: Processes (T12/SD_A_So)

Item	Processes (T12/SD_A_So)	Reference	Status	Support
1	This function can operate in QL–enabled mode	7.7.1	m	
2	This function can operate in QL–disabled mode	7.7.1	m	
3	The mode is provisionable via MI_QLmode	7.7.1	c5701	
4	This function converts the CI_QL and CI_SSF information into a SQLCH control signal	7.7.1	m	
5	In QL-enabled mode, if CI_SSF is true OR CI_QL is below MI_QLminimum, then RI_CS is set to "none"	7.7.1	c5702	
6	In QL-enabled mode, if CI_SSF is false and CI_QL is greater OR equal to MI_QLminimum, then RI_CS is set to CI_CS	7.7.1	c5702	
7	In QL-disabled mode, if CI_SSF is true, RI_CS is set to "none"	7.7.1	c5703	
8	In QL-disabled mode, if CI_SSF is false, RI_CS is set to CI_CS	7.7.1	c5703	
9	RI_QL is set to "QL-NSUPP"	7.7.1	m	

c5701: IF (D.57/1 AND D.57/2 AND D.56/1)THEN m ELSE n/a -- Two modes exist and MI_QLmode is supported.

c5702: IF (D.57/1 AND D.56/2) THEN m ELSE n/a -- QL-enabled mode and MI_QLminimum supported.

c5703: IF D.57/2 THEN m ELSE n/a -- QL-disabled mode supported.

NOTE: The items of this table cover (or partially cover) the logical flow given under "Consequent actions" in 7.7.1.

D.4.7.1.3 Consequent actions (T12/SD_A_So)

Table D.58: Consequent action AI_SQLCH (T12/SD_A_So)

Item	Consequent action AI_SQLCH (T12/SD_A_So)	Reference	Status	Support
1	In QL-enabled mode, if CI_SSF is true OR CI_QL is below MI_QLminimum, then AI_SQLCH is set to true	7.7.1	c5801	
2	In QL-enabled mode, if CI_SSF is false AND CI_QL is greater or equal to MI_QLminimum, then AI_SQLCH is set to false	7.7.1	c5801	
3	In QL-disabled mode, if CI_SSF is true, AI_SQLCH is set to true	7.7.1	c5802	
4	In QL-disabled mode, if CI_SSF is false, AI_SQLCH is set to false	7.7.1	c5802	

c5801: IF D.54/1 THEN m ELSE n/a -- QL-enabled mode supported.

c5802: IF D.54/2 THEN m ELSE n/a -- QL-disabled mode supported.

D.4.7.2 T12 to SD Adaptation Sink T12/SD_A_Sk

Prerequisite: D.1/16 -- T12/SD_A_Sk function exists.

D.4.7.2.1 Management information (T12/SD_A_Sk)

Table D.59: Configuration/provisioning of information from EMF to T12/SD_A_Sk

Item	Configuration/provisioning of information from EMF to T12/SD_A_Sk	Reference	Status	Support
1	T12/SD_A_Sk_CSid is provisionable from the EMF	7.7.2	m	

D.4.7.2.2 Processes (T12/SD_A_Sk)

Table D.60: Processes (T12/SD_A_Sk)

Item	Processes (T12/SD_A_Sk)	Reference	Status	Support
1	This function adapts the 2 048 kHz timing information from an external reference to an equipment specific timing characteristic information	7.7.2	m	
2	This function regenerates the received clock signal and supplies the recovered timing signal to the synchronization distribution layer	7.7.2	m	
3	The function outputs a valid clock signal when any combination of the following signal conditions exist at the input: • an input electrical amplitude level with any value in the range specified in ETS 300 166 [10]; • Jitter modulation applied to the input signal with any value defined in EN 300 462-5-1 [8]; • the input signal frequency has any value in the range 2 048 kHz ± 50 ppm	7.7.2, ETS 300 166 [10], EN 300 462-5-1 [8]	m	
4	The function processes the clock source identifier received via RI_CS to support timing loop prevention	7.7.2	m	
5	If RI_CS is equal to "none", then CI_CS is set to MI_CSid	7.7.2	c6001	
6	If RI_CS is different from "none", then CI_CS is set to RI_CS	7.7.2	m	
7	CI_QL is set to "QL-NSUPP"	7.7.2	m	

c6001: IF D.59/1 THEN m ELSE n/a -- MI_CSid supported.

D.4.7.2.3 Consequent actions (T12/SD_A_Sk)

Table D.61: Consequent action aSSF (T12/SD_A_Sk)

Item	Consequent action aSSF (T12/SD_A_Sk)	Reference	Status	Support
1	The function implements the following logical equation: aSSF <-- AI_TSF	7.7.2	m	

Annex E (normative): ICS proforma for Equipment clock to Transport Layers adaptation functions

E.1 Identification of the implementation

In the present document, an IUT, and of course the identification of an IUT refers to the set of Equipment clock to Transport Layers adaptation functions implemented inside the SUT.

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should be filled in so as to provide as much detail as possible regarding version numbers and configuration options.

The product supplier information and client information should both be filled in if they are different.

A person who can answer queries regarding information supplied in the ICS should be named as the contact person.

E.1.1 Date of the statement

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E.1.2 Implementation Under Test (IUT) identification

IUT name:

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IUT version

Hardware version:

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Software version:

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Firmware version:

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E.1.3 System Under Test (SUT) identification

SUT name:

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Hardware configuration:

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SUT Software version:

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SUT Firmware version:

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Operating system:

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E.1.4 Product supplier

Name:

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Address:

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Telephone number:

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Facsimile number:

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E-mail address:

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Additional information:

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E.1.5 Client

Name:

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Address:

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Telephone number:

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Facsimile number:

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E-mail address:

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Additional information:

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E.1.6 ICS contact person

Name:

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Telephone number:

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Facsimile number:

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E-mail address:

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Additional information:

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E.2 Identification of the EN

This ICS proforma applies to the following document:

EN 300 417-6-1 [1]: "Transmission and Multiplexing (TM); Generic requirements of transport functionalities of equipment; Synchronization layer functions".

E.3 Global statement of conformance of Equipment clock to Transport Layers adaptation functions

Are all mandatory capabilities implemented (Yes/No) .....

NOTE: Answering "No" to this question indicates non-conformance to the EN specification. Non-supported mandatory capabilities are to be identified in the ICS, with an explanation of why the implementation is non-conforming, on pages attached to the ICS proforma.

Answering "Yes" to this question indicates only that all the capabilities with the explicit status "m" are supported. It is not necessary to fill in the support column of the associated items.

E.4 Equipment clock to Transport Layers Adaptation Functions

E.4.0 Equipment clock to Transport Layers Adaptation Functions Description

Table E.1: Equipment clock to Transport Layers adaptation functions

Item	Equipment clock to Transport Layers adaptation functions	Reference	Status	Support
1	STM-1 Layer Clock (LC) Adaptation Source function (MS1-LC_A_So)	8, 4.16, figure 15	o	
2	STM-4 LC Adaptation Source function (MS4-LC_A_So)	8, 4.16, figure 15	o	
3	STM-16 LC Adaptation Source function (MS16-LC_A_So)	8, 4.16, figure 15	o	
4	VC-4 LC Adaptation Source function (S4-LC_A_So)	8, 4.16, figure 15	o	
5	VC-3 LC Adaptation Source function (S3-LC_A_So)	8, 4.16, figure 15	o	
6	VC-2 LC Adaptation Source function (S2-LC_A_So)	8, 4.16, figure 15	o	
7	VC-12 LC Adaptation Source function (S12-LC_A_So)	8, 4.16, figure 15	o	
8	VC-11 LC Adaptation Source function (S11-LC_A_So)	8, 4.16, figure 15	o	
9	P4s LC Adaptation Source function (P4s-LC_A_So)	8, 4.16, figure 15	o	
10	P31s LC Adaptation Source function (P31s-LC_A_So)	8, 4.16, figure 15	o	
11	P12s LC Adaptation Source function (P12s-LC_A_So)	8, 4.16, figure 15	o	
12	T12 LC Adaptation Source function (T12-LC_A_So)	8, 4.16, figure 15	o	

NOTE: These fonctions are conditionally optional, depending of the implementation or not of the correspondent Transport Layer.

E.4.1 STM-N layer

E.4.1.1 STM-1 Layer Clock Adaptation Source

Prerequisite: E.1/1 -- MS1-LC_A_So function exists.

E.4.1.1.1 Processes (MS1-LC_A_So)

Table E.2: Processes (MS1-LC_A_So)

Item	Processes (MS1-LC_A_So)	Reference	Status	Support
1	This function synchronizes the adaptation source functions in this layer (and its server layers)	8.1.1	m	
2	The function generates the clock (bit) reference signal MS1_TI_CK for the STM-1 signal	8.1.1	m	
3	The MS1_TI_CK frequency is 155 520 kHz locked to the input signal SD_CI_CK	8.1.1	m	
4	The function processes the signal such that in the absence of input jitter at the synchronization interface, the intrinsic jitter at the STM-1 output interface is as specified in EN 300 462-5-1 [8] and EN 300 417–2–1 [12] for electrical interface	8.1.1, EN 300 462-5-1 [8], EN 300 417–2–1 [12]	m	
5	The function generates the frame start reference signal MS1_TI_FS for the STM-1 signal	8.1.1	m	
6	The MS1_TI_FS signal is active once per 19 440 clock cycles	8.1.1	m	

E.4.1.2 STM-4 Layer Clock Adaptation Source MS4-LC_A_So

Prerequisite: E.1/2 -- MS4-LC_A_So function exists.

E.4.1.2.1 Processes (MS4-LC_A_So)

Table E.3: Processes (MS4-LC_A_So)

Item	Processes (MS4-LC_A_So)	Reference	Status	Support
1	This function synchronizes the adaptation source functions in this layer (and its server layers)	8.1.2	m	
2	The function generates the clock (bit) reference signal MS4_TI_CK for the STM-4 signal	8.1.2	m	
3	The MS4_TI_CK frequency is 622 080 kHz locked to the input signal SD_CI_CK	8.1.2	m	
4	The function processes the signal such that in the absence of input jitter at the synchronization interface, the intrinsic jitter at the STM-4 output interface is as specified in EN 300 462-5-1 [8]	8.1.2, ETS 300 462-5-1 [8]	m	
5	The function generates the frame start reference signal MS4_TI_FS for the STM-4 signal	8.1.2	m	
6	The MS4_TI_FS signal is active once per 77 760 clock cycles	8.1.2	m	

E.4.1.3 STM-16 Layer Clock Adaptation Source MS16-LC_A_So

Prerequisite: E.1/3 -- MS16-LC_A_So function exists.

E.4.1.3.1 Processes (MS16-LC_A_So)

Table E.4: Processes (MS16-LC_A_So)

Item	Processes (MS16-LC_A_So)	Reference	Status	Support
1	This function synchronizes the adaptation source functions in this layer (and its server layers)	8.1.3	m	
2	The function generates the clock (bit) reference signal MS16_TI_CK for the STM-16 signal	8.1.3	m	
3	The MS16_TI_CK frequency is 2 488 320 kHz locked to the input signal SD_CI_CK	8.1.3	m	
4	The function processes the signal such that in the absence of input jitter at the synchronization interface, the intrinsic jitter at the STM-16 output interface is as specified in EN 300 462-5-1 [8]	8.1.3, EN 300 462-5-1 [8]	m	
5	The function generates the frame start reference signal MS16_TI_FS for the STM-16 signal	8.1.3	m	
6	The MS16_TI_FS signal is active once per 311 040 clock cycles	8.1.3	m	

E.4.2 VC layers

E.4.2.1 VC-4 Layer Clock Adaptation Source S4-LC_A_So

Prerequisite: E.1/4 -- S4-LC_A_So function exists.

E.4.2.1.1 Processes (S4-LC_A_So)

Table E.5: Processes (S4-LC_A_So)

Item	Processes (S4-LC_A_So)	Reference	Status	Support
1	This function synchronizes the adaptation source and connection functions in this layer	8.2.1	m	
2	The function generates the clock (bit) reference signal S4_TI_CK for the VC-4 signal	8.2.1	m	
3	The VC4_TI_CK frequency is 150 336 kHz locked to the input signal SD_CI_CK	8.2.1	m	
4	The function generates the frame start reference signal S4_TI_FS for the VC–4 signal	8.2.1	m	
5	The S4_TI_FS signal is active once per 18 792 clock cycles	8.2.1	m	
6	The S4_TI_MFS signal is active once every four frames	8.2.1	m	

E.4.2.2 VC-3 Layer Clock Adaptation Source S3-LC_A_So

Prerequisite: E.1/5 -- S3-LC_A_So function exists.

E.4.2.2.1 Processes (S3-LC_A_So)

Table E.6: Processes (S3-LC_A_So)

Item	Processes (S3-LC_A_So)	Reference	Status	Support
1	This function synchronizes the adaptation source and connection functions in this layer	8.2.2	m	
2	The function generates the clock (bit) reference signal S3_TI_CK for the VC-3 signal	8.2.2	m	
3	The S3_TI_CK frequency is 48 960 kHz locked to the input signal SD_CI_CK	8.2.2	m	
4	The function generates the frame start reference signal S3_TI_FS for the VC–3 signal	8.2.2	m	
5	The S3_TI_FS signal is active once per 6 120 clock cycles	8.2.2	m	
6	The S3_TI_MFS signal is active once every four frames	8.2.2	m	

E.4.2.3 VC-2 Layer Clock Adaptation Source S2-LC_A_So

Prerequisite: E.1/6 -- S2-LC_A_So function exists.

E.4.2.3.1 Processes (S2-LC_A_So)

Table E.7: Processes (S2-LC_A_So)

Item	Processes (S2-LC_A_So)	Reference	Status	Support
1	This function synchronizes the adaptation source and connection functions in this layer	8.2.3	m	
2	The function generates the clock (bit) reference signal S2_TI_CK for the VC-2 signal	8.2.3	m	
3	The S2_TI_CK frequency is 6 848 kHz locked to the input signal SD_CI_CK	8.2.3	m	
4	The function generates the frame start reference signal S2_TI_FS for the VC-2 signal	8.2.3	m	
5	The S2_TI_FS signal is active once per 856 clock cycles.	8.2.3	m	

E.4.2.4 VC-12 Layer Clock Adaptation Source S12-LC_A_So

Prerequisite: E.1/7-- S12-LC_A_So function exists.

E.4.2.4.1 Processes (S12-LC_A_So)

Table E.8: Processes (S12-LC_A_So)

Item	Processes (S12-LC_A_So)	Reference	Status	Support
1	This function synchronizes the adaptation source and connection functions in this layer	8.2.4	m	
2	The function generates the clock (bit) reference signal S12_TI_CK for the VC-12 signal	8.2.4	m	
3	The S12_TI_CK frequency is 2 240 kHz locked to the input signal SD_CI_CK	8.2.4	m	
4	The function generates the frame start reference signal S12_TI_FS for the VC-12 signal	8.2.4	m	
5	The S12_TI_FS signal is active once per 280 clock cycles	8.2.4	m	

E.4.2.5 VC-11 Layer Clock Adaptation Source S11-LC_A_So

Prerequisite: E.1/8 -- S11-LC_A_So function exists.

E.4.2.5.1 Processes (S11-LC_A_So)

Table E.9: Processes (S11-LC_A_So)

Item	Processes (S11-LC_A_So)	Reference	Status	Support
1	This function synchronizes the adaptation source and connection functions in this layer	8.2.5	m	
2	The function generates the clock (bit) reference signal S11_TI_CK for the VC-11 signal	8.2.5	m	
3	The S11_TI_CK frequency is 1 664 kHz locked to the input signal SD_CI_CK	8.2.5	m	
4	The function generates the frame start reference signal S11_TI_FS for the VC-11 signal	8.2.5	m	
5	The S11_TI_FS signal is active once per 208 clock cycles	8.2.5	m	

E.4.3 Pxx layers

E.4.3.1 P4s Layer Clock Adaptation Source P4s-LC_A_So

Prerequisite: E.1/9 -- P4s-LC_A_So function exists.

E.4.3.1.1 Processes (P4s-LC_A_So)

Table E.10: Processes (P4s-LC_A_So)

Item	Processes (P4s-LC_A_So)	Reference	Status	Support
1	This function synchronizes the adaptation source functions in this layer	8.3.1	m	
2	The function generates the clock (bit) reference signal P4s_TI_CK for the P4s signal	8.3.1	m	
3	The P4s_TI_CK frequency is 139 264 kHz locked to the input signal SD_CI_CK	8.3.1	m	
4	The function generates the frame start reference signal P4s_TI_FS for the P4s signal	8.3.1	m	
5	The P4s_TI_FS signal is active once per 17 408 clock cycles	8.3.1	m	
6	The P4s_TI_MFS signal is active once every 4 frames	8.3.1	m	

E.4.3.2 P31s Layer Clock Adaptation Source P31s-LC_A_So

Prerequisite: E.1/10 -- P31s-LC_A_So function exists.

E.4.3.2.1 Processes (P31s-LC_A_So)

Table E.11: Processes (P31s-LC_A_So)

Item	Processes (P31s-LC_A_So)	Reference	Status	Support
1	This function synchronizes the adaptation source functions in this layer	8.3.2	m	
2	The function generates the clock (bit) reference signal P31s_TI_CK for the P31s signal	8.3.2	m	
3	The P31s_TI_CK frequency is 34 368 kHz locked to the input signal SD_CI_CK	8.3.2	m	
4	The function generates the frame start reference signal P31s_TI_FS for the P31s signal	8.3.2	m	
5	The P31s_TI_FS signal is active once per 4 296 clock cycles	8.3.2	m	
6	The P31s_TI_MFS signal is active once every 4 frames	8.3.2	m	

E.4.3.3 P12s Layer Clock Adaptation Source P12s-LC_A_So

Prerequisite: E.1/11 -- P12s-LC_A_So function exists.

E.4.3.3.1 Processes (P12s-LC_A_So)

Table E.12: Processes (P12s-LC_A_So)

Item	Processes (P12s-LC_A_So)	Reference	Status	Support
1	This function synchronizes the adaptation source and connection functions in this layer	8.3.3	m	
2	The function generates the clock (bit) reference signal P12s_TI_CK for the P12s signal	8.3.3	m	
3	The P12s_TI_CK frequency is 2 048 kHz locked to the input signal SD_CI_CK	8.3.3	m	
4	The function generates the frame start reference signal P12s_TI_FS for the P12s signal	8.3.3	m	
5	The P12s_TI_FS signal is active once per 256 clock cycles.	8.3.3	m	
6	The P12s_TI_MFS signal is active once every 16 frames	8.3.3	m	
7	The function processes the signal such that in the absence of input jitter at the synchronization interface, the intrinsic jitter at the E12 output interface is as specified in EN 300 462-5-1 [8]	8.3.3, EN 300 462-5-1 [8]	m	

E.4.4 T12 layer

E.4.4.1 T12 Layer Clock Adaptation Source T12-LC_A_So

Prerequisite: E.1/12 -- T12-LC_A_So function exists.

E.4.4.1.1 Processes (T12-LC_A_So)

Table E.13: Processes (T12-LC_A_So)

Item	Processes (T12-LC_A_So)	Reference	Status	Support
1	This function synchronizes the adaptation source function T12/SD_A_So	8.4.1	m	
2	The function generates the clock reference signal T12_TI_CK for the 2 048 kHz signal	8.4.1	m	
3	The T12_TI_CK frequency is 2 048 kHz locked to the input signal SD_CI_CK	8.4.1	m	
4	The function processes the signal such that in the absence of input jitter at the synchronization interface, the intrinsic jitter at the T12 output interface is as specified in EN 300 462-5-1 [8]	8.4.1, EN 300 462-5-1 [8]	m	

Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

- ETSI EN 300 462-4-1: "Transmission and Multiplexing (TM); Generic requirements for synchronization networks; Part 4: Timing characteristics of slave clocks suitable for synchronization supply to Synchronous Digital Hierarchy (SDH) and Plesiochronous Digital Hierarchy (PDH) equipment".

- ETSI EN 300 462-6-1: "Transmission and Multiplexing (TM); Generic requirements for synchronization networks; Part 6: Timing characteristics of primary reference clocks".

- ITU-T Recommendation G.811 (1988): "Timing requirements at the outputs of primary reference clocks suitable for plesiochronous operation of international digital links".

- ITU-T Recommendation G.812 (1988.): "Timing requirements at the outputs of slave clocks suitable for plesiochronous operation of international digital links".

- ITU-T Recommendation G.813 (1996): "Timing characteristics of SDH equipment slave clocks (SEC)".

- ITU-T Recommendation G.704 (1998): "Synchronous frame structures used at 1544, 6312, 2048, 8488 and 44 736 kbit/s hierarchical levels".

History

Document history			
V1.1.1	June 1999	Public Enquiry	PE 9947: 1999-06-23 to 1999-11-19
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