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ISO/IEC DTS 10303-312
Product data representation and exchange: Abstract test suite:
Electrotechnical design and installation

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ABSTRACT:
This part of ISO 10303 defines the abstract test suite for ISO/IEC 10303-212, Application protocol: Electrotechnical design and installation. It contains the test purpose and the abstract test cases for use in conformance testing implementations of ISO/IEC 10303-212.

KEYWORDS: abstract test suite, abstract test case, test purpose, electrotechnical

COMMENTS TO READER:
This document has been reviewed and noted by the ISO TC 184/SC4 Quality Committee and SC4 Secretariat and has been determined to be ready for this ballot cycle. This document is based on the ISO/IEC DIS 10303-212. It reflects the latest version of the Guidelines for the development of abstract test suites, edition 2 (ISO TC184/SC4 N873, 1999-08-10).

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard (”state of the art”, for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC DTS 10303-312, which is a Technical Report of type 2, was prepared by Technical Committee ISO/TC 184, Industrial automation systems and integration, Subcommittee SC4, Industrial data.

There is an urgent need for guidance on how to test implementations of ISO 10303 application protocols for conformance to the standard. This Technical Report contains abstract test cases that can be used to test implementations for conformance to ISO/IEC 10303-212.

This document is being issued in the Technical Report (type 2) series of publications (according to subclause G.3.2.2 of part 1 of the ISO/IEC Directives 1995 as a ”prospective standard for provisional application” in the field of conformance testing of ISO 10303 application protocols because there is an urgent need for guidance on how standards in this field should be used to meet an identified need.

This document is not to be regarded as an ”International Standard”. It is proposed for provisional application so that experience of its use in practice may be gathered. Comments on the content of this document should be sent to the ISO Central Secretariat.

A review of this Technical Report (type 2) will be carried out not later than three years after its publication with the options of: extension for another three years; conversion into an International Standard; or withdrawal.

Annexes A, B and C form an integral part of this part of ISO 10303. Annex D is for information only.

ISO 10303 consists of the following parts under the general title *Industrial automation systems and integration – Product data representation and exchange:*

— Part 1, Overview and fundamental principles;

— Part 11, Description methods: The EXPRESS language reference manual;

— Part 12, Description method: The EXPRESS-I language reference manual;

— Part 21, Implementation methods: Clear text encoding of the exchange structure;

— Part 22, Implementation method: Standard data access interface specification;

— Part 23, Implementation method: C++ language binding to the standard data access interface;

— Part 24, Implementation method: C language binding to the standard data access interface;

— Part 26, Implementation method: Interface definition language binding to the standard data access interface;

— Part 31, Conformance testing methodology and framework: General concepts;

— Part 32, Conformance testing methodology and framework: Requirements on testing laboratories and clients;

— Part 34, Conformance testing methodology and framework: Abstract test methods;

— Part 35, Conformance testing methodology and framework: Abstract test methods for SDAI implementations;

— Part 41, Integrated generic resources: Fundamentals of product description and support;

— Part 42, Integrated generic resources: Geometric and topological representation;

— Part 43, Integrated generic resources: Representation structures;

— Part 44, Integrated generic resources: Product structure configuration;

— Part 45, Integrated generic resource: Materials;

— Part 46, Integrated generic resources: Visual presentation;

— Part 47, Integrated generic resource: Shape variation tolerances;

— Part 49, Integrated generic resource: Process structure and properties;

— Part 101, Integrated application resource: Draughting;

— Part 104, Integrated application resource: Finite element analysis;

— Part 105, Integrated application resource: Kinematics;

— Part 106, Integrated application resource: Building construction core model;

— Part 107, Integrated application resource: Engineering Analysis Core Application reference model;

— Part 201, Application protocol: Explicit draughting;

— Part 202, Application protocol: Associative draughting;

— Part 203, Application protocol: Configuration controlled design;

— Part 204, Application protocol: Mechanical design using boundary representation;

— Part 205, Application protocol: Mechanical design using surface representation;

— Part 207, Application protocol: Sheet metal die planning and design;

— Part 208, Application protocol: Life cycle management — Change process;

— Part 209, Application protocol: Composite and metallic structural analysis and related design;

— Part 210, Application protocol: Electronic assembly, interconnect, and packaging design;

— Part 212, Application protocol: Electrotechnical design and installation;

— Part 213, Application protocol: Numerical control process plans for machined parts;

— Part 214, Application protocol: Core data for automotive mechanical design processes;

— Part 215, Application protocol: Ship arrangement;

— Part 216, Application protocol: Ship moulded forms;

— Part 217, Application protocol: Ship piping;

— Part 218, Application protocol: Ship structures;

— Part 220, Application protocol: Process planning, manufacture, and assembly of layered electronic products;

— Part 221, Application protocol: Functional data and their schematic representation for process plant;

— Part 222, Application protocol: Exchange of product data for composite structures;

— Part 223, Application protocol: Exchange of design and manufacturing product information for casting parts;

— Part 224, Application protocol: Mechanical product definition for process plans using machining features;

— Part 225, Application protocol: Building elements using explicit shape representation;

— Part 226, Application protocol: Ship mechanical systems;

— Part 227, Application protocol: Plant spatial configuration;

— Part 229, Application protocol: Exchange of design and manufacturing product information for forged parts;

— Part 230, Application protocol: Building structural frame: Steelwork;

— Part 231, Application protocol: Process engineering data: Process design and process specification of major equipment;

— Part 232, Application Protocol: Technical data packaging core information and exchange;

— Part 233, Application Protocol: Systems engineering data representation;

— Part 234, Application Protocol: Ship Operational logs, records, and messages;

— Part 235, Application Protocol: Materials information for the design and verification of products;

— Part 301, Abstract test suite: Explicit draughting;

— Part 302, Abstract test suite: Associative draughting;

— Part 303, Abstract test suite: Configuration controlled design;

— Part 304, Abstract test suite: Mechanical design using boundary representation;

— Part 305, Abstract test suite: Mechanical design using surface representation;

— Part 307, Abstract test suite: Sheet metal die planning and design;

— Part 308, Abstract test suite: Life cycle management — Change process;

— Part 309, Abstract test suite: Composite and metallic structural analysis and related design;

— Part 310, Abstract test suite: Electronic assembly, interconnect, and packaging design;

— Part 312, Abstract test suite: Electrotechnical design and installation;

— Part 313, Abstract test suite: Numerical control process plans for machined parts;

— Part 314, Abstract test suite: Core data for automotive mechanical design;

— Part 315, Abstract test suite: Ship arrangement;

— Part 316, Abstract test suite: Ship moulded forms;

— Part 317, Abstract test suite: Ship piping;

— Part 318, Abstract test suite: Ship structures;

— Part 321, Abstract test suite: Functional data and their schematic representation for process plant;

— Part 322, Abstract test suite: Exchange of product data for composite structures;

— Part 323, Abstract test suite: Exchange of design and manufacturing product information for casting parts;

— Part 324, Abstract test suite: Mechanical product definition for process plans using machining features;

— Part 325, Abstract test suite: Building elements using explicit shape representation;

— Part 326, Abstract test suite: Ship mechanical systems;

— Part 327, Abstract test suite: Plant spatial configuration;

— Part 329, Abstract test suite: Exchange of design and manufacturing product information for forged parts;

— Part 330, Abstract test suite: Building structural frame: Steelwork;

— Part 331, Abstract test suite: Process engineering data: Process design and process specification of major equipment;

— Part 332, Abstract test suite: Technical data packaging core information and exchange;

— Part 334, Abstract test suite: Ship Operational logs, records, and messages;

— Part 335, Abstract test suite: Materials information for the design and verification of products;

— Part 501, Application interpreted construct: Edge-based wireframe;

— Part 502, Application interpreted construct: Shell-based wireframe;

— Part 503, Application interpreted construct: Geometrically bounded 2D wireframe;

— Part 504, Application interpreted construct: Draughting annotation;

— Part 505, Application interpreted construct: Drawing structure and administration;

— Part 506, Application interpreted construct: Draughting elements;

— Part 507, Application interpreted construct: Geometrically bounded surface;

— Part 508, Application interpreted construct: Non-manifold surface;

— Part 509, Application interpreted construct: Manifold surface;

— Part 510, Application interpreted construct: Geometrically bounded wireframe;

— Part 511, Application interpreted construct: Topologically bounded surface;

— Part 512, Application interpreted construct: Faceted boundary representation;

— Part 513, Application interpreted construct: Elementary boundary representation;

— Part 514, Application interpreted construct: Advanced boundary representation;

— Part 515, Application interpreted construct: Constructive solid geometry;

— Part 517, Application interpreted construct: Mechanical design geometric presentation;

— Part 518, Application interpreted construct: Mechanical design shaded representation;

— Part 519, Application interpreted construct: Geometric tolerances;

— Part 520, Application interpreted construct: Associative draughting elements.

The structure of this International Standard is described in ISO 10303-1. The numbering of the parts of this International Standard reflects its structure:

— Parts 11 to 12 specify the description methods,

— Parts 21 to 26 specify the implementation methods,

— Parts 31 to 35 specify the conformance testing methodology and framework,

— Parts 41 to 49 specify the integrated generic resources,

— Parts 101 to 108 specify the integrated application resources,

— Parts 201 to 235 specify the application protocols,

— Parts 301 to 335 specify the abstract test suites, and

— Parts 501 to 520 specify the application interpreted constructs.

Should further parts of ISO 10303 be published, they will follow the same numbering pattern.

Annexes A, B and C are an integral part of this part of ISO 10303. Annex D is for information only.

Introduction

ISO 10303 is an International Standard for the computer-interpretable representation and exchange of product data. The objective is to provide a neutral mechanism capable of describing product data throughout the life cycle of a product independent from any particular system. The nature of this description makes it suitable not only for neutral file exchange, but also as a basis for implementing and sharing product databases and archiving.

This International Standard is organized as a series of parts, each published separately. The parts of ISO 10303 fall into one of the following series: description methods, integrated resources, application interpreted constructs, application protocols, abstract test suites, implementation methods, and conformance testing. The series are described in ISO 10303–1. This part of ISO 10303 is a member of the abstract test suites series.

The purpose of an abstract test suite is to provide a basis for evaluating whether a particular implementation of an application protocol actually conforms to the requirements of that application protocol. A standard abstract test suite helps ensure that evaluations of conformance are conducted in a consistent manner by different test laboratories.

This part of ISO 10303 specifies the abstract test suite for ISO/IEC 10303–212, Application protocol: Electrotechnical design and installation. The abstract test cases presented here are the basis for conformance testing of implementations of ISO/IEC 10303–212.

This abstract test suite is made up of two major parts:

— the test purposes, the specific items to be covered by conformance testing;

— the set of abstract test cases that meet those test purposes.

The test purposes are statements of the application protocol requirements that are to be addressed by the abstract test cases. Test purposes are derived primarily from the application protocol's AEs and AIM, as well as from other sources such as standards referenced by the application protocol and other requirements stated in the application protocol conformance requirement clause.

The abstract test cases address the test purposes by:

— specifying the requirement for input data to be used when testing an implementation of the application protocol;

— specifying the verdict criteria to be used when evaluating whether the implementation successfully converted the input data to a different form.

The abstract test cases set the requirements for the executable test cases that are required to actually conduct a conformance test. Executable test cases contain scripts, detailed values, and other explicit information required to conduct a conformance test on a specific implementation of the application protocol.

At the time of publication of this document, conformance testing requirements had been established for implementations of application protocols in combination with ISO 10303–21 and ISO 10303–22. Accordingly, this part of ISO 10303 only specifies test purposes and abstract test cases appropriate to such implementations. For either ISO 10303–21 or ISO 10303–22, two kinds of implementations must be tested, preprocessors and postprocessors. The nature of the input data and verdict criteria are different for these two kinds of implementations. Both are addressed in this abstract test suite.

Industrial automation systems and integration — Product data representation and exchange — Part 312: Abstract test suite: Electrotechnical design and installation

1 Scope

This part of ISO 10303 specifies the abstract test suite to be used in the conformance testing of implementations of ISO/IEC 10303–212.

The following are within the scope of this part of ISO 10303:

— the specification of the test purposes associated with ISO/IEC 10303–212;

— the verdict criteria to be applied during conformance testing of an implementation of ISO/IEC 10303–212 using ISO 10303–21 or ISO 10303–22;

— the abstract test cases to be used as the basis for the executable test cases for conformance testing.

The following are outside the scope of this part of ISO 10303:

— the creation of executable test cases;

— testing other than conformance testing;

— other implementation methods.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 10303. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 10303 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 286–1:1988, *ISO system of limits and fits – Part 1: Bases of tolerances, deviations, and fits.*

ISO 286–2:1988, *ISO system of limits and fits – Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts.*

ISO/DIS 639–2:—[1)], *Codes for the representation of names of languages – Part 2: Alpha-3 code.*

ISO 965–1:1980, *ISO general purpose metric screw threads – Tolerances – Part 1: Principles and basic data.*

ISO 1101:1983, *Technical drawings – Geometric tolerancing – Tolerancing of form, orientation, location and run-out – Generalities, definitions, symbols, indications on drawings.*

ISO 2692:1988, *Technical drawings – Geometric tolerancing – Maximum material principle.*

ISO 2768–1:1989, *General tolerances – Part 1: Tolerances for linear and angular dimensions without individual tolerance indications.*

ISO 2768–2:1989, *General tolerances – Part 2: Geometrical tolerances for features without individual tolerance indications.*

ISO 3098–1:1974, *Technical drawings; lettering; part 1: Currently used characters.*

ISO 3098–2:1984, *Technical drawings; lettering; part 2: Greek characters.*

ISO 5458:1987, *Technical drawings – Geometric tolerancing – Positional tolerancing.*

ISO 5459:1981, *Technical drawings – Geometric tolerancing – Datums and datum-systms for geometrical tolerances.*

ISO 8015:1985, *Technical drawings – Fundamental tolerancing principle.*

ISO 8824–1:1994, *Information Technology – Open systems interconnection – Abstract syntax notation one (ASN.1) – Part 1: Specification of basic notation.*

[1)] To be published.

ISO 10303–1:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Overview and fundamental principles

ISO 10303–11:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Description methods: The EXPRESS *language reference manual*

ISO 10303–21:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Implementation methods: Clear text encoding of the exchange structure

ISO 10303–22:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Implementation methods: Standard data access interface

ISO 10303–31:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Conformance testing methodology and framework: General concepts

ISO 10303–41:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resource: Fundamentals of product description and support
– ISO TC 184/SC4 N539

ISO 10303–42:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resources: Geometric and topological representation

ISO 10303–43:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resource: Representation structures
– ISO TC 184/SC4 N540

ISO 10303–44:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resource: Product structure configuration
– ISO TC 184/SC4 N541

ISO 10303–45:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resources: Materials

ISO 10303–46:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resources: Visual presentation

ISO 10303–47:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resources: Shape variation tolerances

ISO 10303–49:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resources: Process structure and properties

ISO 10303–101:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated application resources: Draughting

ISO 10303–105:1996, *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated application resources: Kinematics

ISO 10303–201:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Application protocol: Explicit draughting

ISO 10303–202:1996, *Industrial automation systems and integration*
– Product data representation and exchange:
– Application protocol: Associative draughting

ISO 10303–501:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Edge-based wireframe

ISO 10303–503:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Geometrically bounded 2d wireframe

ISO 10303–504:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Draughting annotation

ISO 10303–506:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Draughting elements

ISO 10303–507:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Geometrically bounded wireframe

ISO 10303–508:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Non-manifold surface

ISO 10303–509:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Manifold surface

ISO 10303–510:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Geometrically bounded wireframe

ISO 10303–511:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Topologically bounded surface

ISO 10303–512:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Faceted boundary representation

ISO 10303–514:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Advanced boundary representation

ISO 10303–515:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Constructive solid geometry

ISO 10303–517:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Mechanical design geometric presentation

ISO 10303–5x1:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Geometric tolerances
– ISO TC 184/SC4 N542

ISO 10303–5x2:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Associative draughting elements
– ISO TC 184/SC4 N543

ISO 10578:1992, *Technical drawings – Tolerancing of orientation and location – Projected tolerance zone.*

ISO 13584–42:—[1)], *Industrial automation systems and integration*
– Parts library:
– Part 42: Description methodology: Methodology for structuring part families

3 Terms, definitions and abbreviations

For the purpose of this part of ISO 10303, the following definitions and abbreviations apply.

3.1 Terms defined in ISO 10303–1

This part of ISO 10303 makes use of the following terms defined in ISO 10303–1:

— abstract test suite (ATS);

— application interpreted model (AIM);

— application object;

— application protocol (AP);

— application reference model (ARM);

— implementation method;

— information;

— product data;

— unit of functionality (UoF).

3.2 Terms defined in ISO 10303–31

This part of ISO 10303 makes use of the following terms defined in ISO 10303–31:

— abstract test case (ATC);

— conformance testing;

— executable test case;

— implementation under test (IUT);

— postprocessor;

— preprocessor;

— test purpose;

— verdict criteria.

3.3 Terms defined in ISO 10303–42

This part of ISO 10303 makes use of the following terms defined in ISO 10303–42:

— constructive solid geometry.CSG

3.4 Terms defined in ISO 10303–46

This part of ISO 10303 makes use of the following terms defined in ISO 10303–46:

— layer;

— planar;

— presentation.

3.5 Abbreviations

For the purpose of this part of ISO 10303, the following abbreviations apply:

AE	Application element
CAD	Computer Aided Design
CSG	Constructive Solid Geometry
GVC	General verdict criteria
P1	geometric_presentation UoF
S1	product_management_data UoF
S2	element_structure UoF

4 Test purposes

This clause specifies the test purposes for this part of ISO 10303.

Test purposes are implicitely derived from the AP information requirement application elements and are not explicitely documented here. They shall be interpreted as given in the following statement: the IUT shall preserve the semantic associated with the unique application element from which the test purpose was implicitely derived. This implies that the semantics of the application element are preserved by the IUT between the input and output of a test, according to the reference path specified in the mapping table of the AP. AE test purposes apply to the input specifications of both preprocessor and postprocessor test cases. AE test purposes are implicitely derived from the AP information requirements as follows:

— application objects (see 4.2 of ISO/IEC 10303–212). A test purpose derived from an application object is a simple statement of the object's name.

— application object attributes (see 4.2 of ISO/IEC 10303–212). Test purposes derived from application object attributes are statements of the application object name with a specific attribute name.

— application assertions (see 4.3 of ISO/IEC 10303–212). Test purposes derived from application assertions are statements describing the relationship between two application objects. Application assertion test purposes address the directions of relationships as well as the number (cardinality) of relationships.

Test purposes are implicitely derived from the AP AIM EXPRESS, and are not explicitely documented here. They shall be interepreted as given in the following statement: The postprocessor shall accept the input in accordance with the AIM EXPRESS structure corresponding to this test purpose. This implies that the semantics of the application element represented by the AIM element are preserved by the IUT between the input and output of a test according to the reference path specified in the mapping table of the AP. This also implied no violations of any constraints (e.g., where rules or global rules) that apply to the AIM element. AIM test purposes apply to the input specifications of postprocessor test cases only. AIM test purposes are implicitely derived from the expanded EXPRESS listing contained in annex A of ISO/IEC 10303–212 as follows:

— AIM entities. A test purpose derived from an AIM entity is a simple statement of the entity name.

— AIM entity attributes. A test purpose derived from an AIM entity attribute is a statement of the AIM entity with a given attribute.

5 General test purposes and verdict criteria

General test purposes are statements of requirements that apply to all abstract test cases, all preprocessor abstract test cases, or all postprocessor test cases. General verdict criteria are the means for evaluating whether the general test purposes are met. General verdict criteria shall be evaluated as a part of every executable test case to which they apply.

5.1 General test purposes

The following are the general test purposes for this part of ISO 10303:

— g1 Output of preprocessor conforms to the implementation method the IUT claims conformance to.

— g2 Instances in output of preprocessor are encoded according to the AIM EXPRESS expanded listing as defined in annex A of ISO/IEC 10303–212.

— g3 Preprocessor translates input data according to the mapping tables presented in clause 5 of ISO/IEC 10303–212.

— g4 Postprocessor accepts input data which is encoded following the implementation method the IUT claims conformance to.

— g5 Output of postprocessor covers full semantics of given input data.

5.2 General verdict criteria for preprocessor abstract test cases

The following verdict criteria apply to all preprocessor abstract test cases contained in this part of ISO 10303.

— GVC1: Preprocessor output conforms to the implementation method to which the IUT claims conformance to.

— GVC2: Preprocessor output represents an instance graph that belongs to the set of all instance graphs possible for the AIM schema to which the IUT claims conformance.

— GVC3: Preprocessor translates the input according to clause 5 of ISO/IEC 10303–212.

5.3 General verdict criteria for postprocessor abstract test cases

The following verdict criteria apply to all postprocessor abstract test cases contained in this part of ISO 10303.

— GVC4: Postprocessor accepts input data according to the implementation method the IUT claims conformance to.

— GVC5: Postprocessor output covers full semantics of the input data.

6 Abstract test cases

This clause specifies the abstract test cases for this part of ISO 10303. Each abstract test case addresses one or more test purposes from clause 4.

The title for an abstract test case signifies a key aspect of the abstract test case and is unique within this part of ISO 10303.

NOTE 1 - The abstract test cases are organized into categories of UoFs. Some UoFs are summarized into one test case. The input is described in terms of application elements of ISO/IEC 10303-212.

NOTE 2 - Boilerplate is expected to be provided by the ATS Guidelines for a description of the preprocessor input. However, here is a short explanation. The input is described in terms of application elements of ISO/IEC 10303–212 which are to be instantiated, which is accompanied by plots of geometric portions where necessary (the reason for this is that the AE level description of geometric elements in ISO/IEC 10303–212 is very abstract, but an unambiguous description of the input is required). The table's "Id" column gives an identifier for each AE (be it an instance of an application object, an attribute, or an assertion). This identifier is assembled from the test purpose associated with the entry, and an additional numeric identifier in the case the complete identifier needs to be unique as it is used for referencing purposes. The "V" column presents an asterisk with all entries whose correct processing by the IUT has to be verified when assigning a test verdict in order to guarantee full coverage of all test purposes defined in clause 4. The given attribute values are suggested values if the entry in the "M/S" column is "S". They are mandatory values if the entry in the "M/S" column is "M". If this column contains entries in the form of ISO 10303–21 instance names then the values are found encoded in the corresponding instance of the postprocessor input specification.

6.1 Conditions, External Reference, Work Management and Organizational Data

Test case summary:

This abstract test case covers application elements of the Unit of Functionality CD01 (Conditions), ER1 (External Reference), W1 (Work Management) and OD1 (Organizational Data)

6.1.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 1

Table 1 – Application elements for ATC Conditions, External Reference, Work Management and Organizational Data

Id	V	Application elements	Value	Req
@238	∗	Physical_document		M
@106	∗	Document_representation		M
	∗	Physical_document.component	(@164)	M
	∗	Physical_document to Document_version	@108	M
	∗	(as associated_document_version)		M
	∗	Physical_document to	@104	M
	∗	Document_designation (as id)		M
@2	∗	Activity		M
	∗	Activity.concerned_organization	(@219)	M
	∗	Activity.supplying_organization	(@219)	M
	∗	Activity.activity_type	#1040, ”any name”	M
	∗	Activity.id	#1050, ”any id”	M
	∗	Activity.resolved_request	(@354)	M
@2.2		Activity		M
		Activity.concerned_organization	(@219)	M
		Activity.supplying_organization	(@219)	M
		Activity.activity_type	#1260, ”any name”	M
		Activity.id	#1050, ”any id”	M
		Activity.resolved_request	(@354)	M
@277	∗	Rectangular_area		M
	∗	Rectangular_area.height	#880, ”0.”	M
	∗	Rectangular_area.width	#880, ”0.”	M
@282	∗	Requirement_assignment		M
	∗	Requirement_assignment.relation_type	#190, ”any name”	M
	∗	Requirement_assignment to Requirement	@281	M
	∗	(as associated_requirement)		M
	∗	Requirement_assignment to Product_class	@259	M
	∗	(as constrained_element)		M
@268	∗	Project_relationship		M
	∗	Project_relationship.relation_type	#1510, ”any name”	M
	∗	Project_relationship to Project (as	@267	M
	∗	related)		M
	∗	Project_relationship to Project (as	@267.2	M
	∗	relating)		M
@4	∗	Activity_method		M
	∗	Activity_method.name	#1060, ”any name”	M
	∗	Activity_method.description	#1060, ”any description”	M
@259	∗	Product_class		M
	∗	Product_class.level_type	#220, ”any description”	M

Table 1 (continued)

Id	V	Application elements	Value	Req
	*	Product_class.id	#220, ”any id”	M
@164	*	Hardcopy		M
@102	*	Document_component		M
	*	Hardcopy.id	#570, ”any id”	M
@283	*	Requirement_document_assignment		M
	*	Requirement_document_assignment to	@281	M
	*	Requirement (as documented_requirement)		M
	*	Requirement_document_assignment to	@100	M
	*	Document (as documentation)		M
@234	*	Person		M
	*	Person.id	#1790, ”any id”	M
@25	*	Approval		M
	*	Approval.is_applied_to	(@3)	M
	*	Approval.is_approved_by	(@78)	M
	*	Approval to Approval_status (as status)	@27	M
@25.2		Approval		M
		Approval.is_applied_to	(@3)	M
		Approval.is_approved_by	(@78)	M
		Approval to Approval_status (as status)	@27	M
@3	*	Activity_element		M
	*	Activity_element.role	#1350, ”.INPUT.”	M
	*	Activity_element to Activity (as	@2	M
	*	associated_activity)		M
	*	Activity_element to Activity_method (as	@4	M
	*	element)		M
@104	*	Document_designation		M
@179	*	Item_designation		M
	*	Document_designation.designator	#430, ”any version id”	M
@353	*	Work_order		M
	*	Work_order.work_order_type	#980, ”work order”	M
	*	Work_order.id	#990, ”any id”	M
	*	Work_order.is_controlling	(@2, @2.2)	M
@214	*	Numerical_value		M
	*	Numerical_value.unit_component	#930, ”any name”	M
	*	Numerical_value.value_component	#920, ”1.”	M
@90	*	Digital_document		M
	*	Digital_document.file	(@91)	M
	*	Digital_document to Document_version	@108	M
	*	(as associated_document_version)		M
	*	Digital_document to	@104	M
	*	Document_designation (as id)		M

Table 1 (continued)

Id	V	Application elements	Value	Req
@105	∗	Document_property		M
	∗	Document_property.language_code	(#830, ”deutsch”)	M
	∗	Document_property to Digital_document	@90	M
	∗	(as is_applied_to)		M
@240	∗	Physical_model		M
	∗	Physical_model to Document_version (as	@108	M
	∗	associated_document_version)		M
	∗	Physical_model to Document_designation	@104	M
	∗	(as id)		M
@78	∗	Date_and_person_or_organization		M
	∗	Date_and_person_or_organization to	@79	M
	∗	Date_time (as associated_date)		M
	∗	Date_and_person_or_organization to	@235	M
	∗	Person_in_organization (as		M
	∗	person_or_organization)		M
@77	∗	Date_and_person_assignment		M
	∗	Date_and_person_assignment.role	#1650, ”role”	M
	∗	Date_and_person_assignment.is_applied_to	(@3)	M
	∗	Date_and_person_assignment to	@78	M
	∗	Date_and_person_or_organization (as		M
	∗	assigned_date_and_person)		M
@91	∗	Digital_file		M
	∗	Digital_file.id	#440, ”any name”	M
@63	∗	Contract		M
	∗	Contract.id	#1520, ”any id”	M
	∗	Contract.contracted_element	(@267)	M
@5	∗	Activity_method_assignment		M
	∗	Activity_method_assignment to	@4	M
	∗	Activity_method (as assigned_method)		M
	∗	Activity_method_assignment to	@354	M
	∗	Work_request (as assigned_work_request)		M
@281	∗	Requirement		M
	∗	Requirement.id	#70, ”any description”	M
@281.2		Requirement		M
		Requirement.id	#160, ”any description”	M
@100	∗	Document		M
	∗	Document.id	#310, ”any id”	M
@109	∗	Document_version_relationship		M
	∗	Document_version_relationship.relation_	#750, ”any name”	M
	∗	type		M

Table 1 (continued)

Id	V	Application elements	Value	Req
	*	Document_version_relationship to	@108	M
	*	Document_version (as relating)		M
	*	Document_version_relationship to	@108.2	M
	*	Document_version (as related)		M
@235	*	Person_in_organization		M
	*	Person_in_organization.role	#1820, ”role”	M
	*	Person_in_organization to Person (as	@234	M
	*	associated_person)		M
	*	Person_in_organization to Organization	@219	M
	*	(as associated_organization)		M
@220	*	Organization_in_contract		M
	*	Organization_in_contract.role_of_	#1570, ”role of organization”	M
	*	organization		M
	*	Organization_in_contract.signature	(@78)	M
	*	Organization_in_contract.contract	(@63)	M
	*	Organization_in_contract to	@219	M
	*	Organization (as		M
	*	contracted_organization)		M
@79	*	Date_time		M
	*	Date_time.date	#1100, ”2000”	M
@6	*	Activity_relationship		M
	*	Activity_relationship.relation_type	#1270, ”any name”	M
	*	Activity_relationship to Activity (as	@2	M
	*	relating)		M
	*	Activity_relationship to Activity (as	@2.2	M
	*	related)		M
@108	*	Document_version		M
	*	Document_version.id	#370, ”any version id”	M
	*	Document_version to Document (as	@100	M
	*	associated_document)		M
@108.2		Document_version		M
		Document_version.id	#540, ”any version id”	M
		Document_version to Document (as	@100	M
		associated_document)		M
@298	*	Security_level		M
	*	Security_level.level_name	#1870, ”any name”	M
@228	*	Partial_document_assignment		M
@101	*	Document_assignment		M
	*	Partial_document_assignment.role	#970, ”role”	M
	*	Partial_document_assignment.document_	#960, ”document portion”	M

Table 1 (continued)

Id	V	Application elements	Value	Req
	∗	portion		M
	∗	Partial_document_assignment to	@353	M
	∗	Work_order (as is_assigned_to)		M
	∗	Partial_document_assignment to Document	@100	M
	∗	(as assigned_document)		M
@236	∗	Person_or_organization_assignment		M
	∗	Person_or_organization_assignment.role	#1840, ”role”	M
	∗	Person_or_organization_assignment.is_	(@3)	M
	∗	applied_to		M
	∗	Person_or_organization_assignment to	@235	M
	∗	Person_in_organization (as		M
	∗	assigned_person_or_organization)		M
@267	∗	Project		M
	∗	Project.work_program	(@2)	M
	∗	Project.id	#1390, ”any name”	M
	∗	Project.affected_product_class	(@259)	M
@267.2		Project		M
		Project.work_program	(@2.2)	M
		Project.id	#1500, ”any id”	M
		Project.affected_product_class	(@259)	M
@278	∗	Rectangular_size		M
	∗	Rectangular_size to Rectangular_area	@277	M
	∗	(as extent)		M
@50	∗	Classification_system		M
	∗	Classification_system.id	#1740, ”any name”	M
@219	∗	Organization		M
	∗	Organization.name	#1150, ”any name”	M
	∗	Organization.id	#1150, ”any id”	M
	∗	Organization.organization_type	#1150, ”any description”	M
@297	∗	Security_classification		M
	∗	Security_classification.name	#1860, ”any name”	M
	∗	Security_classification.purpose	#1860, ”purpose”	M
	∗	Security_classification.is_applied_to	(@3)	M
	∗	Security_classification to	@298	M
	∗	Security_level (as		M
	∗	security_classification_level)		M
@107	∗	Document_structure		M
	∗	Document_structure.relation_type	#740, ”any name”	M
	∗	Document_structure to Digital_document	@90	M
	∗	(as related)		M

Table 1 (continued)

Id	V	Application elements	Value	Req
	∗	Document_structure to Physical_document	@238	M
	∗	(as relating)		M
@284	∗	Requirement_relationship		M
	∗	Requirement_relationship.relation_type	#240, ”any name”	M
	∗	Requirement_relationship to Requirement	@281	M
	∗	(as relating)		M
	∗	Requirement_relationship to Requirement	@281.2	M
	∗	(as related)		M
@27	∗	Approval_status		M
	∗	Approval_status.status_name	#1700, ”any name”	M
@26	∗	Approval_relationship		M
	∗	Approval_relationship.relation_type	#1720, ”any name”	M
	∗	Approval_relationship to Approval (as	@25	M
	∗	relating)		M
	∗	Approval_relationship to Approval (as	@25.2	M
	∗	related)		M
@80	∗	Date_time_assignment		M
	∗	Date_time_assignment.role	#1690, ”planned”	M
	∗	Date_time_assignment.is_applied_to	(@3)	M
	∗	Date_time_assignment to Date_time (as	@79	M
	∗	assigned_date_time)		M
@7	∗	Address		M
@101		Document_assignment		M
		Document_assignment.role	#470, ”role”	M
		Document_assignment to Work_order (as	@353	M
		is_assigned_to)		M
		Document_assignment to Document (as	@100	M
		assigned_document)		M
@103	∗	Document_component_relationship		M
	∗	Document_component_relationship.	#730, ”any name”	M
	∗	relation_type		M
	∗	Document_component_relationship to	@91	M
	∗	Digital_file (as relating)		M
	∗	Document_component_relationship to	@164	M
	∗	Hardcopy (as related)		M
@354	∗	Work_request		M
	∗	Work_request.id	#1230, ”any id”	M
	∗	Work_request.status	#1280, ”status”	M
	∗	Work_request.request_type	#1230, ”requirement type”	M
	∗	Work_request.notified_person_or_	(@78)	M

Table 1 (concluded)

Id	V	Application elements	Value	Req
	*	organization		M
	*	Work_request.scope	(@4)	M

6.1.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.2 Configuration Management

Test case summary:

This abstract test case covers application elements of the Unit of Functionality CF1 (Configuration Management)

6.2.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 2

Table 2 – Application elements for ATC Configuration Management

Id	V	Application elements	Value	Req
@272	∗	Quantified_device		M
@87	∗	Device		M
	∗	Device to Object_reference_designation	@215.2	M
	∗	(as id)		M
	∗	Device to Design_discipline_item_	@85	M
	∗	definition (as definition)		M
	∗	Quantified_device to Numerical_value	@214	M
	∗	(as quantity)		M
@299	∗	Selected_device		M
	∗	Selected_device.selection_control	#190, ”selection control”	M
	∗	Device to Object_reference_designation	@215.2	M
	∗	(as id)		M
	∗	Device to Design_discipline_item_	@85	M
	∗	definition (as definition)		M
	∗	Selected_device to Single_value (as	@312	M
	∗	selected_quantity)		M
@316	∗	Specification		M
	∗	Specification.id	#2110, ”any id”	M
	∗	Specification.package	.T.	M
	∗	Specification to Specification_category	@317	M
	∗	(as category)		M
@319	∗	Specification_inclusion		M
	∗	Specification_inclusion to	@316	M
	∗	Specification (as if_condition)		M
	∗	Specification_inclusion to	@318	M
	∗	Specification_expression (as		M
	∗	included_specification)		M
@84	∗	Descriptive_specification		M
	∗	Descriptive_specification.description	#1600, ”any description”	M
@259		Product_class		M
		Product_class.level_type	#630, ”any name”	M
		Product_class.id	#630, ”any id”	M
@315	∗	Solution_instance_assignment		M
	∗	Solution_instance_assignment to	@13	M
	∗	Alternative_solution (as solution)		M
	∗	Solution_instance_assignment to Device	@299	M
	∗	(as instance)		M
@177	∗	Item		M
	∗	Item to Item_identification (as id)	@181	M

Table 2 (continued)

Id	V	Application elements	Value	Req
@177.2		Item		M
		Item to Item_identification (as id)	@181.2	M
@327	*	Technical_solution		M
@13	*	Alternative_solution		M
	*	Technical_solution.id	#1700, ”any id”	M
	*	Technical_solution.description	#1700, ”any description”	M
	*	Technical_solution to Product_component	@261	M
	*	(as base_element)		M
@180	*	Item_designation_relationship		M
	*	Item_designation_relationship to	@215.2	M
	*	Object_reference_designation (as		M
	*	related_item_designation)		M
	*	Item_designation_relationship to	@215	M
	*	Object_reference_designation (as		M
	*	relating_item_designation)		M
@215	*	Object_reference_designation		M
	*	Object_reference_designation.designator	#610, ”any version id”	M
@215.2		Object_reference_designation		M
		Object_reference_designation.designator	#370, ”any version id”	M
@24	*	Application_context		M
	*	Application_context.application_domain	#800, ”electrical design”	M
	*	Application_context.life_cycle_stage	#850, ”preliminary design”	M
@312	*	Single_value		M
@76	*	Data_element_value		M
	*	Single_value.name	#260, ”LOGICAL”	M
	*	Single_value to Logical_value (as	@195	M
	*	value_of_single_value)		M
@85	*	Design_discipline_item_definition		M
	*	Design_discipline_item_definition.id	#130, ”any id”	M
	*	Design_discipline_item_definition.is_	(@24)	M
	*	relevant_for		M
	*	Design_discipline_item_definition to	@183	M
	*	Item_version (as		M
	*	associated_item_version)		M
@214		Numerical_value		M
		Numerical_value.unit_component	#450, ”.METRE.”	M
		Numerical_value.value_component	#440, ”0.”	M
@40	*	Class_category_association		M
	*	Class_category_association.mandatory	.T.	M
	*	Class_category_association to	@259	M
	*	Product_class (as		M

Table 2 (continued)

Id	V	Application elements	Value	Req
	∗	associated_product_class)		M
	∗	Class_category_association to	@317	M
	∗	Specification_category (as category)		M
@41	∗	Class_condition_association		M
	∗	Class_condition_association.condition_	#2210, ”any id”	M
	∗	type		M
	∗	Class_condition_association to	@259	M
	∗	Product_class (as		M
	∗	associated_product_class)		M
	∗	Class_condition_association to	@318	M
	∗	Specification_expression (as		M
	∗	used_condition)		M
@264	∗	Product_design		M
	∗	Product_design to	@265	M
	∗	Product_identification (as product)		M
	∗	Product_design to Item_version (as	@183	M
	∗	design)		M
@167	∗	Instance_placement		M
	∗	Instance_placement.transformation	#1920, ”any name”	M
	∗	Instance_placement to	@311	M
	∗	Single_function_unit (as		M
	∗	placed_instance)		M
	∗	Instance_placement to Product_component	@261	M
	∗	(as referenced_product_component)		M
@29	∗	Assembly_definition		M
	∗	Assembly_definition.id	#840, ”any id”	M
	∗	Assembly_definition.is_relevant_for	(@24)	M
	∗	Assembly_definition to Item_version (as	@183.2	M
	∗	associated_item_version)		M
@266	∗	Product_specification		M
@265	∗	Product_identification		M
	∗	Product_specification.id	#2090, ”any id”	M
	∗	Product_specification.defining_	(@316)	M
	∗	specification		M
	∗	Product_specification to Product_class	@259	M
	∗	(as associated_product_class)		M
@262	∗	Product_component_allocation		M
	∗	Product_component_allocation to	@261	M
	∗	Product_component (as		M
	∗	associated_product_component)		M

Table 2 (continued)

Id	V	Application elements	Value	Req
	*	Product_component_allocation to Device	@299	M
	*	(as product_component_implementation)		M
@195	*	Logical_value		M
	*	Logical_value.value_of_logical_value	#270, ”any name”	M
@300	*	Serial_configuration		M
@197	*	Manufacturing_configuration		M
	*	Serial_configuration.serial_start_number	#730, ”start id”	M
	*	Serial_configuration to	@265	M
	*	Product_identification (as		M
	*	is_solution_for)		M
	*	Serial_configuration to Device (as	@299	M
	*	configured_element)		M
@265		Product_identification		M
		Product_identification.id	# , ”any id”	M
		Product_identification to Product_class	@259	M
		(as associated_product_class)		M
@311	*	Single_function_unit		M
@140	*	Function_unit		M
	*	Single_function_unit to	@265	M
	*	Product_identification (as		M
	*	instanciated_function)		M
	*	Single_function_unit to	@215.2	M
	*	Object_reference_designation (as id)		M
@183	*	Item_version		M
	*	Item_version.version_id	#60, ”any id”	M
	*	Item_version to Item (as	@177	M
	*	associated_item)		M
@183.2		Item_version		M
		Item_version.version_id	#830, ”any id”	M
		Item_version to Item (as	@177.2	M
		associated_item)		M
@326	*	Supplier_solution		M
	*	Supplier_solution.id	#1270, ”any id”	M
	*	Supplier_solution to Product_component	@261	M
	*	(as base_element)		M
	*	Supplier_solution to Organization (as	@219	M
	*	supplier)		M
@50		Classification_system		M
		Classification_system.id	#1030, ”any name”	M
@14	*	Alternative_solution_relationship		M

Table 2 (continued)

Id	V	Application elements	Value	Req
	*	Alternative_solution_relationship.	#1630, ”alternative definition”	M
	*	relation_type		M
	*	Alternative_solution_relationship to	@134	M
	*	Final_solution (as relating)		M
	*	Alternative_solution_relationship to	@13	M
	*	Alternative_solution (as related)		M
@219		Organization		M
		Organization.name	#1060, ”any name”	M
		Organization.id	#1060, ”any id”	M
		Organization.organization_type	#1060, ”any description”	M
@134	*	Final_solution		M
	*	Final_solution.id	#1480, ”any id”	M
	*	Final_solution.final_status	#1520, ”final”	M
	*	Final_solution.final_specification	(@84)	M
	*	Final_solution to Product_component (as	@261	M
	*	base_element)		M
@196	*	Lot_configuration		M
	*	Lot_configuration.lot_id	#960, ”lot id”	M
	*	Lot_configuration.lot_size	#970, ”any name”	M
	*	Lot_configuration to	@265	M
	*	Product_identification (as		M
	*	is_solution_for)		M
	*	Lot_configuration to Device (as	@299	M
	*	configured_element)		M
@55	*	Configuration		M
	*	Configuration.configuration_type	#2290, ”.DESIGN.”	M
	*	Configuration.inheritance_type	#2290, ”.LOCAL_212”	M
	*	Configuration to	@41	M
	*	Class_condition_association (as		M
	*	is_solution_for)		M
	*	Configuration to Product_component (as	@261	M
	*	configured_element)		M
@261	*	Product_component		M
	*	Product_component.is_influenced_by	(@40)	M
	*	Product_component.instance_required	.T.	M
	*	Product_component.is_relevant_for	(@24)	M
	*	Product_component to	@215	M
	*	Object_reference_designation (as id)		M
@181	*	Item_identification		M
	*	Item_identification.id	#10, ”any id”	M

Table 2 (continued)

Id	V	Application elements	Value	Req
@181.2		Item_identification		M
		Item_identification.id	#770, ”any id”	M
@42	*	Class_inclusion_association		M
	*	Class_inclusion_association to	@259	M
	*	Product_class (as		M
	*	associated_product_class)		M
	*	Class_inclusion_association to	@319	M
	*	Specification_inclusion (as inclusion)		M
@44	*	Class_specification_association		M
	*	Class_specification_association.	#2100, ”availability	M
	*	association_type	identification”	M
	*	Class_specification_association to	@259	M
	*	Product_class (as		M
	*	associated_product_class)		M
	*	Class_specification_association to	@316	M
	*	Specification (as used_specification)		M
@7		Address		M
@45	*	Class_structure_relationship		M
	*	Class_structure_relationship.relation_	#690, ”any name”	M
	*	type		M
	*	Class_structure_relationship to	@259	M
	*	Product_class (as relating)		M
	*	Class_structure_relationship to	@261	M
	*	Product_component (as related)		M
@81	*	Dated_configuration		M
	*	Dated_configuration.start_date	#910, ”1999.2.2”	M
	*	Dated_configuration to	@265	M
	*	Product_identification (as		M
	*	is_solution_for)		M
	*	Dated_configuration to Device (as	@299	M
	*	configured_element)		M
@317	*	Specification_category		M
	*	Specification_category.description	#2180, ”any description”	M
	*	Specification_category.implicit_	.T.	M
	*	exclusive_condition		M
	*	Specification_category.id	#2180, ”any id”	M
@13		Alternative_solution		M
		Alternative_solution.id	#1140, ”any id”	M
		Alternative_solution to	@261	M
		Product_component (as base_element)		M

Table 2 (concluded)

Id	V	Application elements	Value	Req
@318	*	Specification_expression		M
	*	Specification_expression.operand	(@316)	M
	*	Specification_expression.operation	#2200, ".OR_212."	M

6.2.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.3 Function Structure

Test case summary:

This abstract test case covers application elements of the Unit of Functionality F1 (Function Structure)

6.3.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 3

Table 3 – Application elements for ATC Function Structure

Id	V	Application elements	Value	Req
@142	∗	Function_version	#21	M
	∗	Function_version.version_id	#21, ”any id”	M
	∗	Function_version to Functionality (as	@147	M
	∗	base_function)		M
@142.2		Function_version	#46	M
		Function_version.version_id	#46, ”any id”	M
		Function_version to Functionality (as	@147.2	M
		base_function)		M
@142.3		Function_version	#7	M
		Function_version.version_id	#7, ”any id”	M
		Function_version to Functionality (as	@147.3	M
		base_function)		M
@142.4		Function_version	#32	M
		Function_version.version_id	#32, ”any id”	M
		Function_version to Functionality (as	@147.4	M
		base_function)		M
@142.5		Function_version	#60	M
		Function_version.version_id	#60, ”any id”	M
		Function_version to Functionality (as	@147.5	M
		base_function)		M
@142.6		Function_version	#74	M
		Function_version.version_id	#74, ”any id”	M
		Function_version to Functionality (as	@147.6	M
		base_function)		M
@142.7		Function_version	#86	M
		Function_version.version_id	#86, ”any id”	M
		Function_version to Functionality (as	@147.7	M
		base_function)		M
@142.8		Function_version	#99	M
		Function_version.version_id	#99, ”any id”	M
		Function_version to Functionality (as	@147.8	M
		base_function)		M
@215		Object_reference_designation	#13	M
		Object_reference_designation.designator	#13, ”any version id”	M
@215.2		Object_reference_designation	#38	M
		Object_reference_designation.designator	#38, ”any version id”	M
@215.3		Object_reference_designation	#66	M
		Object_reference_designation.designator	#66, ”any version id”	M
@143	∗	Function_version_relationship	#53	M

Table 3 (continued)

Id	V	Application elements	Value	Req
	*	Function_version_relationship.relation_	#53, ”function version	M
	*	type	relationship”	M
	*	Function_version_relationship to	@142	M
	*	Function_version (as relating)		M
	*	Function_version_relationship to	@142.2	M
	*	Function_version (as related)		M
@321	*	Specified_function_unit	#105	M
	*	Specified_function_unit to	@137.5	M
	*	Function_definition (as		M
	*	instanciated_function)		M
	*	Specified_function_unit to	@215.3	M
	*	Object_reference_designation (as id)		M
	*	Specified_function_unit to	@311	M
	*	Single_function_unit (as		M
	*	related_function_unit)		M
	*	Specified_function_unit to	@311.2	M
	*	Single_function_unit (as upper_usage)		M
@137	*	Function_definition	#8	M
	*	Function_definition.id	#8, ”any id”	M
	*	Function_definition.is_relevant_for	()	M
	*	Function_definition to Function_version	@142.3	M
	*	(as version)		M
@137.2		Function_definition	#33	M
		Function_definition.id	#33, ”any id”	M
		Function_definition.is_relevant_for	()	M
		Function_definition to Function_version	@142.4	M
		(as version)		M
@137.3		Function_definition	#22	M
		Function_definition.id	#22, ”any id”	M
		Function_definition.is_relevant_for	()	M
		Function_definition to Function_version	@142	M
		(as version)		M
@137.4		Function_definition	#47	M
		Function_definition.id	#47, ”any id”	M
		Function_definition.is_relevant_for	()	M
		Function_definition to Function_version	@142.2	M
		(as version)		M
@137.5		Function_definition	#61	M
		Function_definition.id	#61, ”any id”	M
		Function_definition.is_relevant_for	()	M

Table 3 (continued)

Id	V	Application elements	Value	Req
		Function_definition to Function_version	@142.5	M
		(as version)		M
@137.6		Function_definition	#100	M
		Function_definition.id	#100, ”any id”	M
		Function_definition.is_relevant_for	()	M
		Function_definition to Function_version	@142.8	M
		(as version)		M
@137.7		Function_definition	#87	M
		Function_definition.id	#87, ”any id”	M
		Function_definition.is_relevant_for	()	M
		Function_definition to Function_version	@142.7	M
		(as version)		M
@137.8		Function_definition	#75	M
		Function_definition.id	#75, ”any id”	M
		Function_definition.is_relevant_for	()	M
		Function_definition to Function_version	@142.6	M
		(as version)		M
@54	∗	Composition_relationship	#106	M
	∗	Composition_relationship to	@311	M
	∗	Single_function_unit (as		M
	∗	functional_component)		M
	∗	Composition_relationship to	@137.8	M
	∗	Function_definition (as		M
	∗	composed_function)		M
@147	∗	Functionality	#15	M
	∗	Functionality.id	#15, ”4711”	M
@147.2		Functionality	#40	M
		Functionality.id	#40, ”4711”	M
@147.3		Functionality	#1	M
		Functionality.id	#1, ”4711”	M
@147.4		Functionality	#26	M
		Functionality.id	#26, ”4711”	M
@147.5		Functionality	#54	M
		Functionality.id	#54, ”4711”	M
@147.6		Functionality	#68	M
		Functionality.id	#68, ”4711”	M
@147.7		Functionality	#80	M
		Functionality.id	#80, ”4711”	M
@147.8		Functionality	#93	M
		Functionality.id	#93, ”4711”	M

Table 3 (concluded)

Id	V	Application elements	Value	Req
@311		Single_function_unit	#12	M
		Single_function_unit to	@137	M
		Function_definition (as		M
		instanciated_function)		M
		Single_function_unit to	@215	M
		Object_reference_designation (as id)		M
@311.2		Single_function_unit	#37	M
		Single_function_unit to	@137.2	M
		Function_definition (as		M
		instanciated_function)		M
		Single_function_unit to	@215.2	M
		Object_reference_designation (as id)		M
@141	*	Function_unit_relationship	#51	M
	*	Function_unit_relationship.relation_type	#51, ”function unit relationship”	M
	*	Function_unit_relationship to	@311	M
	*	Single_function_unit (as relating)		M
	*	Function_unit_relationship to	@311.2	M
	*	Single_function_unit (as related)		M
@138	*	Function_definition_relationship	#52	M
	*	Function_definition_relationship.	#52, ”function definition	M
	*	relation_type	relationship”	M
	*	Function_definition_relationship to	@137.3	M
	*	Function_definition (as relating)		M
	*	Function_definition_relationship to	@137.4	M
	*	Function_definition (as related)		M

6.3.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.4 Installation, Course and Schematic Documentation

Test case summary:

This abstract test case covers application elements of the Unit of Functionality IN1 (Installation) CO1 (Course) and SI1 (Schematic Documentation)

6.4.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 4

Table 4 – Application elements for ATC Installation, Course and Schematic Documentation

Id	V	Application elements	Value	Req
@215		Object_reference_designation		M
		Item_designation.designator	#300, ”any version id”	M
@215.2		Object_reference_designation		M
		Item_designation.designator	#370, ”any version id”	M
@237	*	Physical_assembly_relationship		M
	*	Physical_assembly_relationship to	@239.2	M
	*	Physical_instance (as		M
	*	physical_component)		M
	*	Physical_assembly_relationship to	@239	M
	*	Physical_instance (as physical_assembly)		M
	*	Physical_assembly_relationship to	@310	M
	*	Single_device (as is_realization_of)		M
@237.2		Physical_assembly_relationship		M
		Physical_assembly_relationship to	@239	M
		Physical_instance (as		M
		physical_component)		M
		Physical_assembly_relationship to	@239.2	M
		Physical_instance (as physical_assembly)		M
		Physical_assembly_relationship to	@310	M
		Single_device (as is_realization_of)		M
@230	*	Path_node		M
	*	Path_node.id	#810, ”any name”	M
	*	Path_node to Location (as defined_in)	@192.2	M
	*	Path_node to Cartesian_point (as	@38.2	M
	*	position)		M
@230.2		Path_node		M
		Path_node.id	#1890, ”any name”	M
		Path_node to Location (as defined_in)	@192.4	M
		Path_node to Cartesian_point (as	@38.4	M
		position)		M
@230.3		Path_node		M
		Path_node.id	#2970, ”id”	M
		Path_node to Location (as defined_in)	@192.5	M
		Path_node to Cartesian_point (as	@38.6	M
		position)		M
@230.4		Path_node		M
		Path_node.id	#3210, ”id”	M
		Path_node to Location (as defined_in)	@192.6	M
		Path_node to Cartesian_point (as	@38.8	M

Table 4 (continued)

Id	V	Application elements	Value	Req
		position)		M
@230.5		Path_node		M
		Path_node.id	#4900, ”id”	M
		Path_node to Location (as defined_in)	@192.8	M
		Path_node to Cartesian_point (as	@38.11	M
		position)		M
@230.6		Path_node		M
		Path_node.id	#5140, ”id”	M
		Path_node to Location (as defined_in)	@192.9	M
		Path_node to Cartesian_point (as	@38.13	M
		position)		M
@287	∗	Route_relationship		M
	∗	Route_relationship.relation_type	#6150, ”any name”	M
	∗	Route_relationship to Route (as related)	@286	M
	∗	Route_relationship to Route (as	@286.2	M
	∗	relating)		M
@289	∗	Routed_segment		M
	∗	Routed_segment.id	#2210, ”id”	M
	∗	Routed_segment.course	(@286.2, @286)	M
@166	∗	Hierarchical_location_relationship		M
@194	∗	Location_relationship		M
	∗	Hierarchical_location_relationship to	@192.10	M
	∗	Location (as related)		M
	∗	Hierarchical_location_relationship to	@192.8	M
	∗	Location (as relating)		M
@177		Item		M
		Item to Item_identification (as id)	@181	M
@177.2		Item		M
		Item to Item_identification (as id)	@181.2	M
@302	∗	Shape		M
	∗	Shape.id	#800, ”any name”	M
@24		Application_context		M
		Application_context.application_domain	#720, ”electrical design”	M
		Application_context.life_cycle_stage	#770, ”preliminary design”	M
@294	∗	Section_interface		M
	∗	Section_interface.id	#3510, ”id”	M
	∗	Section_interface.joins	(@293)	M
	∗	Section_interface.implemented_by	(@310)	M
@294.2		Section_interface		M
		Section_interface.id	#5440, ”id”	M

Table 4 (continued)

Id	V	Application elements	Value	Req
		Section_interface.joins	(@293.2)	M
		Section_interface.implemented_by	(@310)	M
@136	*	Free_segment		M
	*	Free_segment.ends_at	(@207)	M
	*	Free_segment.id	#110, ”any name”	M
@136.2		Free_segment		M
		Free_segment.ends_at	(@207.2)	M
		Free_segment.id	#1190, ”any name”	M
@295	*	Section_interface_relationship		M
	*	Section_interface_relationship.relation_	#6120, ”any name”	M
	*	type		M
	*	Section_interface_relationship to	@294	M
	*	Section_interface (as related)		M
	*	Section_interface_relationship to	@294.2	M
	*	Section_interface (as relating)		M
@312		Single_value		M
		Single_value.name	#2440, ”logical”	M
		Single_value to Logical_value (as	@195	M
		value_of_single_value)		M
@312.2		Single_value		M
		Single_value.name	#2590. ”STRING”	M
		Single_value to String_value (as	@323	M
		value_of_single_value)		M
@312.3		Single_value		M
		Single_value.name	#2870, ”BINARY”	M
		Single_value to Binary_value (as	@30	M
		value_of_single_value)		M
@312.4		Single_value		M
		Single_value.name	#4120, ”any name”	M
		Single_value to Numerical_value (as	@214.2	M
		value_of_single_value)		M
@312.5		Single_value		M
		Single_value.name	#4310, ”bending radius”	M
		Single_value to Logical_value (as	@195.2	M
		value_of_single_value)		M
@312.6		Single_value		M
		Single_value.name	#4470, ”section length”	M
		Single_value to String_value (as	@323.2	M
		value_of_single_value)		M
@312.7		Single_value		M

Table 4 (continued)

Id	V	Application elements	Value	Req
		Single_value.name	#4750, ”any name”	M
		Single_value to Binary_value (as value_of_single_value)	@30.2	M M
@312.8		Single_value		M
		Single_value.name	#6050, ”any name”	M
		Single_value to Numerical_value (as value_of_single_value)	@214.4	M M
@229	∗	Path		M
	∗	Path.id	#2920, ”id”	M
	∗	Path.consists_of	(@233)	M
@229.2		Path		M
		Path.id	#4850, ”id”	M
		Path.consists_of	(@233.2)	M
@293	∗	Section_end		M
	∗	Section_end.id	#3840, ”id”	M
	∗	Section_end to Section (as of_section)	@292	M
@293.2		Section_end		M
		Section_end.id	#5770, ”id”	M
		Section_end to Section (as of_section)	@292.2	M
@85		Design_discipline_item_definition		M
		Design_discipline_item_definition.id	#320, ”any id”	M
		Design_discipline_item_definition.is_relevant_for	(@24)	M M
		Design_discipline_item_definition to Item_version (as associated_item_version)	@183	M M M
@85.2		Design_discipline_item_definition		M
		Design_discipline_item_definition.id	#760, ”any id”	M
		Design_discipline_item_definition.is_relevant_for	(@24)	M M
		Design_discipline_item_definition to Item_version (as associated_item_version)	@183.2	M M M
@214		Numerical_value		M
		Numerical_value.unit_component	#650, ”METRE.”	M
		Numerical_value.value_component	#2540, ”1.”	M
@214.2		Numerical_value		M
		Numerical_value.unit_component	#3610, ”METRE.”	M
		Numerical_value.value_component	#3580, ”0.”	M
@214.3		Numerical_value		M
		Numerical_value.unit_component	#4130, ”METRE.”	M
		Numerical_value.value_component	#4470, ”1.”	M
@214.4		Numerical_value		M

Table 4 (continued)

Id	V	Application elements	Value	Req
		Numerical_value.unit_component	#5540, ”METRE.”	M
		Numerical_value.value_component	#5510, ”0.”	M
@233	∗	Path_segment		M
	∗	Path_segment.id	#2960, ”id”	M
	∗	Path_segment to Path_node (as begins_at)	@230.3	M
	∗	Path_segment to Path_node (as ends_at)	@230.4	M
	∗	Path_segment to Location (as defined_in)	@192.6	M
	∗	Path_segment to Curve_3d (as form)	@67	M
@233.2		Path_segment		M
		Path_segment.id	4890, ”id”	M
		Path_segment to Path_node (as begins_at)	@230.5	M
		Path_segment to Path_node (as ends_at)	@230.6	M
		Path_segment to Location (as defined_in)	@192.9	M
		Path_segment to Curve_3d (as form)	@67.2	M
@160	∗	Gis_position		M
	∗	Gis_position.x_axis_delta_x	#490, ”0”	M
	∗	Gis_position.x_axis_delta_y	#490, ”0”	M
	∗	Gis_position.scale	#480, ”0”	M
	∗	Gis_position.x_coordinate	#510, ”0”	M
	∗	Gis_position.y_coordinate	#520, ”0”	M
	∗	Gis_position.height	#460, ”0”	M
	∗	Gis_position.system	#580, ”system”	M
	∗	Gis_position.zone	#530, ”zone”	M
@160.2		Gis_position		M
		Gis_position.x_axis_delta_x	#1570, ”0”	M
		Gis_position.x_axis_delta_y	#1580, ”0”	M
		Gis_position.scale	#1590, ”0”	M
		Gis_position.x_coordinate	#1600, ”0”	M
		Gis_position.y_coordinate	#1560, ”0”	M
		Gis_position.height	#1540, ”0”	M
		Gis_position.system	#1660, ”system”	M
		Gis_position.zone	#1610, ”zone”	M
@161	∗	Group		M
	∗	Group.id	#2620, ”lang_code”	M
	∗	Group.members	()	M
@323	∗	String_value		M
	∗	String_value.value_of_string_value	#2570, ”value of string value”	M
@323.2		String_value		M
		String_value.value_of_string_value	#4500, ”value of string value”	M
@239	∗	Physical_instance		M
	∗	Physical_instance to	@85	M

Table 4 (continued)

Id	V	Application elements	Value	Req
	∗	Design_discipline_item_definition (as		M
	∗	is_realization_of)		M
@239.2		Physical_instance		M
		Physical_instance to	@85	M
		Design_discipline_item_definition (as		M
		is_realization_of)		M
@292	∗	Section		M
	∗	Section.id	#2310, ”id”	M
	∗	Section.implemented_by	(@310)	M
@292.2		Section		M
		Section.id	#4240, ”id”	M
		Section.implemented_by	(@310)	M
@36	∗	Cartesian_coordinate_space_3d		M
	∗	Cartesian_coordinate_space_3d.length_	#650, ”.METRE.”	M
	∗	measure_unit		M
	∗	Cartesian_coordinate_space_3d.plane_	#640, ”0.”	M
	∗	angle_measure_unit		M
	∗	Cartesian_coordinate_space_3d to	@213	M
	∗	Numerical_precision (as precision)		M
@36.2		Cartesian_coordinate_space_3d		M
		Cartesian_coordinate_space_3d.length_	650, ”.METRE.”	M
		measure_unit		M
		Cartesian_coordinate_space_3d.plane_	#640, ”0.”	M
		angle_measure_unit		M
		Cartesian_coordinate_space_3d to	@213.2	M
		Numerical_precision (as precision)		M
@36.3		Cartesian_coordinate_space_3d		M
		Cartesian_coordinate_space_3d.length_	#3200, ”.METRE.”	M
		measure_unit		M
		Cartesian_coordinate_space_3d.plane_	#3190, ”0.”	M
		angle_measure_unit		M
		Cartesian_coordinate_space_3d to	@213.3	M
		Numerical_precision (as precision)		M
@36.4		Cartesian_coordinate_space_3d		M
		Cartesian_coordinate_space_3d.length_	#3440, ”.METRE.”	M
		measure_unit		M
		Cartesian_coordinate_space_3d.plane_	#3410, ”0.”	M
		angle_measure_unit		M
		Cartesian_coordinate_space_3d to	@213.4	M
		Numerical_precision (as precision)		M

Table 4 (continued)

Id	V	Application elements	Value	Req
@36.5		Cartesian_coordinate_space_3d		M
		Cartesian_coordinate_space_3d.length_	#3440, ".METRE."	M
		measure_unit		M
		Cartesian_coordinate_space_3d.plane_	#34340, "0."	M
		angle_measure_unit		M
		Cartesian_coordinate_space_3d to	@213.5	M
		Numerical_precision (as precision)		M
@36.6		Cartesian_coordinate_space_3d		M
		Cartesian_coordinate_space_3d.length_	#5130, ".METRE."	M
		measure_unit		M
		Cartesian_coordinate_space_3d.plane_	#5120, "0."	M
		angle_measure_unit		M
		Cartesian_coordinate_space_3d to	@213.6	M
		Numerical_precision (as precision)		M
@36.7		Cartesian_coordinate_space_3d		M
		Cartesian_coordinate_space_3d.length_	#5370, ".METRE."	M
		measure_unit		M
		Cartesian_coordinate_space_3d.plane_	#5360, "0."	M
		angle_measure_unit		M
		Cartesian_coordinate_space_3d to	@213.7	M
		Numerical_precision (as precision)		M
@36.8		Cartesian_coordinate_space_3d		M
		Cartesian_coordinate_space_3d.length_	#5370, ".METRE."	M
		measure_unit		M
		Cartesian_coordinate_space_3d.plane_	#5360,"0."	M
		angle_measure_unit		M
		Cartesian_coordinate_space_3d to	@213.8	M
		Numerical_precision (as precision)		M
@288	*	Routed_object		M
	*	Routed_object.arrangement	(@136)	M
	*	Routed_object to Physical_instance (as	@239	M
	*	associated_object)		M
@288.2		Routed_object		M
		Routed_object.arrangement	(@136.2)	M
		Routed_object to Physical_instance (as	@239.2	M
		associated_object)		M
@213	*	Numerical_precision		M
	*	Numerical_precision.distance_precision	#620, "0."	M
	*	Numerical_precision.angular_precision	#640, "0."	M
@213.2		Numerical_precision		M

Table 4 (continued)

Id	V	Application elements	Value	Req
		Numerical_precision.distance_precision Numerical_precision.angular_precision	#1700, ”0.” #1720, ”0.”	M M
@213.3		Numerical_precision Numerical_precision.distance_precision Numerical_precision.angular_precision	 #3170, ”0.” #3190, ”0.”	M M M
@213.4		Numerical_precision Numerical_precision.distance_precision Numerical_precision.angular_precision	 #3410, ”0.” #3430, ”0”	M M M
@213.5		Numerical_precision Numerical_precision.distance_precision Numerical_precision.angular_precision	 #3410, ”0.” #3430, ”0.”	M M M
@213.6		Numerical_precision Numerical_precision.distance_precision Numerical_precision.angular_precision	 #5100, ”0.” #5120, ”0.”	M M M
@213.7		Numerical_precision Numerical_precision.distance_precision Numerical_precision.angular_precision	 0 0	M M M
@213.8		Numerical_precision Numerical_precision.distance_precision Numerical_precision.angular_precision	 #5340, ”0.” #5360, ”0.”	M M M
@67	∗	Curve_3d		M
@67.2		Curve_3d		M
@30	∗ ∗	Binary_value Binary_value.value_of_binary_value	 #2850, ”binary value”	M M
@30.2		Binary_value Binary_value.value_of_binary_value	 #4780, ”binary value”	M M
@195		Logical_value Logical_value.value_of_logical_value	 #2390, ”log value”	M M
@195.2		Logical_value Logical_value.value_of_logical_value	 #4320, ”log value”	M M
@65	∗ ∗ ∗	Cross_section Cross_section to Numerical_value (as value_of_cross_section)	 @214	M M M
@65.2		Cross_section Cross_section to Numerical_value (as value_of_cross_section)	 @214.2	M M M
@65.3		Cross_section Cross_section to Numerical_value (as value_of_cross_section)	 @214.3	M M M
@65.4		Cross_section		M

Table 4 (continued)

Id	V	Application elements	Value	Req
		Cross_section to Numerical_value (as value_of_cross_section)	@214.4	M M
@183		Item_version Item_version.version_id Item_version to Item (as associated_item)	 #260, ”any version id” @177	M M M M
@183.2		Item_version Item_version.version_id Item_version to Item (as associated_item)	 #750, ”any version id” @177.2	M M M M
@310	* * * * * *	Single_device Single_device to Object_reference_designation (as id) Single_device to Design_discipline_item_definition (as definition)	 @215 @85	M M M M M M
@192	* * * * *	Location Location to Object_reference_designation (as id) Location to Design_discipline_item_definition (as defining_item)	 @215.2 @85.2	M M M M M
@192.2		Location Location to Object_reference_designation (as id) Location to Design_discipline_item_definition (as defining_item)	 @215.2 @85.2	M M M M M
@192.3		Location Location to Object_reference_designation (as id) Location to Design_discipline_item_definition (as defining_item)	 @215.2 @85.2	M M M M M
@192.4		Location Location to Object_reference_designation (as id) Location to Design_discipline_item_definition (as defining_item)	 @215 @85.2	M M M M M
@192.5		Location Location to Object_reference_designation (as id) Location to Design_discipline_item_	 @215 @85	M M M M

Table 4 (continued)

Id	V	Application elements	Value	Req
		definition (as defining_item)		M
@192.6		Location		M
		Location to Object_reference_	@215	M
		designation (as id)		M
		Location to Design_discipline_item_	@85	M
		definition (as defining_item)		M
@192.7		Location		M
		Location to Object_reference_	@215	M
		designation (as id)		M
		Location to Design_discipline_item_	@85	M
		definition (as defining_item)		M
@192.8		Location		M
		Location to Object_reference_	@215	M
		designation (as id)		M
		Location to Design_discipline_item_	@85	M
		definition (as defining_item)		M
@192.9		Location		M
		Location to Object_reference_	@215	M
		designation (as id)		M
		Location to Design_discipline_item_	@85	M
		definition (as defining_item)		M
@192.10		Location		M
		Location to Object_reference_	@215	M
		designation (as id)		M
		Location to Design_discipline_item_	@85	M
		definition (as defining_item)		M
@208	*	Node_relationship		M
	*	Node_relationship.relation_type	#1120, ”any name”	M
	*	Node_relationship to Node (as related)	@207	M
	*	Node_relationship to Node (as relating)	@207.3	M
@303	*	Shape_assignment		M
	*	Shape_assignment.role	#780, ”any name”	M
	*	Shape_assignment to Shape (as	@302	M
	*	assigned_shape)		M
	*	Shape_assignment to Location (as	@192.8	M
	*	associated_item)		M
@34	*	Cable_pull_information		M
	*	Cable_pull_information.associated_object	(@288, @288.2)	M
	*	Cable_pull_information.id	#30, ”id”	M
@231	*	Path_node_relationship		M

Table 4 (continued)

Id	V	Application elements	Value	Req
	∗ ∗ ∗ ∗ ∗	Path_node_relationship.relation_type Path_node_relationship to Path_node (as related) Path_node_relationship to Path_node (as relating)	#1130, ”any name” @230 @230.2	M M M M M
@38	∗ ∗ ∗	Cartesian_point Cartesian_point.coordinates	 (#3150, ”6.”, #3150, ”4.”, #3150, ”2.”)	M M M
@38.2		Cartesian_point Cartesian_point.coordinates	 (#820, ”0.”, #820, ”0.”, #820, ”0.”)	M M M
@38.3		Cartesian_point Cartesian_point.coordinates	 (#3390, ”6.”, #3390, ”4.”, #3390, ”2.”)	M M M
@38.4		Cartesian_point Cartesian_point.coordinates	 (#1900, ”0.”, #1900, ”0.”, #1900, ”0.”)	M M M
@38.5		Cartesian_point Cartesian_point.coordinates	 (#5080, ”6.”, #5080, ”4.”, #5080, ”2.”)	M M M
@38.6		Cartesian_point Cartesian_point.coordinates	 (#5320, ”6.”, #5320, ”4.”, #5320, ”2.”)	M M M
@38.7		Cartesian_point Cartesian_point.coordinates	 (#5080, ”6.”, #5080, ”4.”, #5080, ”2.”)	M M M
@38.8		Cartesian_point Cartesian_point.coordinates	 (#5080, ”6.”, #5080, ”4.”, #5080, ”2.”)	M M M
@38.9		Cartesian_point Cartesian_point.coordinates	 (#3150, ”6.”, #3150, ”4.”, #3150, ”2.”)	M M M
@38.10		Cartesian_point Cartesian_point.coordinates	 (#5080, ”6.”, #5080, ”4.”, #5080, ”2.”)	M M M
@38.11		Cartesian_point Cartesian_point.coordinates	 (#5320, ”6..”, #5320, ”4.”, #5320, ”2.”)	M M M
@38.12		Cartesian_point Cartesian_point.coordinates	 (#5320, ”6..”, #5320, ”4.”, #5320,	M M

Table 4 (continued)

Id	V	Application elements	Value	Req
			”2.”)	M
@38.13		Cartesian_point Cartesian_point.coordinates	 (#5320, ”6..”, #5320, ”4.”, #5320, ”2.”)	M M M
@38.14		Cartesian_point Cartesian_point.coordinates	 (#5320, ”6.”, #5320, ”4.”, #5320, ”2.”)	M M M
@286	∗ ∗ ∗ ∗	Route Route.id Route.course Route.encountered_object	 #2250, ”id” (@294, @292) ()	M M M M
@286.2		Route Route.id Route.course Route.encountered_object	 #4180, ”id” (@294.2, @292.2) ()	M M M M
@232	∗ ∗ ∗ ∗	Path_relationship Path_relationship.relation_type Path_relationship to Path (as related) Path_relationship to Path (as relating)	 #6140, ”any name” @229 @229.2	M M M M
@181		Item_identification Item_identification.id	 #210, ”id”	M M
@181.2		Item_identification Item_identification.id	 #690, ”id”	M M
@148	∗ ∗ ∗ ∗ ∗ ∗ ∗	General_location_relationship General_location_relationship.relation_type General_location_relationship to Location (as related) General_location_relationship to Location (as relating)	 #1140, ”any name” @192 @192.3	M M M M M M M
@296	∗ ∗ ∗ ∗ ∗ ∗	Section_relationship Section_relationship.relation_type Section_relationship to Section (as relating) Section_relationship to Section (as related)	 #6130, ”any name” @292 @292.2	M M M M M M
@207	∗ ∗ ∗ ∗	Node Node.id Node.implemented_by Node to Location (as assigned_location)	 #150, ”any name” (@310) @192	M M M M

Table 4 (concluded)

Id	V	Application elements	Value	Req
@207.2		Node		M
		Node.id	#1230, ”any name”	M
		Node.implemented_by	(@310)	M
		Node to Location (as assigned_location)	@192.3	M
@207.3		Node		M
		Node.id	#3880, ”any name”	M
		Node.implemented_by	(@310)	M
		Node to Location (as assigned_location)	@192.7	M
@207.4		Node		M
		Node.id	#5810, ”any name”	M
		Node.implemented_by	(@310)	M
		Node to Location (as assigned_location)	@192.10	M
@203	∗	Neighbourhood_location_relationship		M
	∗	Neighbourhood_location_relationship.	#1150, ”any id”	M
	∗	relation_type		M
	∗	Neighbourhood_location_relationship to	@192.2	M
	∗	Location (as related)		M
	∗	Neighbourhood_location_relationship to	@192.4	M
	∗	Location (as relating)		M

6.4.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.5 Remark, Effectivity Data and Properties

Test case summary:

This abstract test case covers application elements of the Unit of Functionality R1 (Remark) EF1 (Effectivity Data) and PR1 (Properties)

6.5.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 5

Table 5 – Application elements for ATC Remark, Effectivity Data and Properties

Id	V	Application elements	Value	Req
@209	*	Note	#1040	M
@153	*	Generic_note		M
@301	*	Set_of_notes		M
	*	Generic_note.id	#1040, ”any id”	M
	*	Generic_note.annotated_item	(@261)	M
	*	Note.language_code	#1070, ”language code”	M
	*	Note.text_of_note	#1050, ”text of note”	M
	*	Note.kind	#1050, ”any name”	M
	*	Set_of_notes.grouped_notes	(@209.2)	M
@215		Object_reference_designation	#380	M
		Item_designation.designator	#380, ”any version id”	M
@209.2		Note	#480	M
		Generic_note.id	#480, ”any id”	M
		Generic_note.annotated_item	(@261.2)	M
		Note.language_code	#520, ”language code”	M
		Note.text_of_note	#490, ”text of note”	M
		Note.kind	#490, ”any name”	M
@215.2		Object_reference_designation	#970	M
		Item_designation.designator	#970, ”any version id”	M
@215.3		Object_reference_designation	#2460	M
		Item_designation.designator	#2460, ”any version id”	M
@253	*	Predefined_text_font	#2190	M
@336	*	Text_font		M
	*	Predefined_text_font.font_id	#2190, ”ISO_10646”	M
@334	*	Text	#2160	M
@17	*	Annotation_element		M
@110	*	Draughting_annotation		M
	*	Text.alignment	#2220, ”.LEFT_ALIGNED.”	M
	*	Text to Text_appearance (as	@335	M
	*	default_appearance)		M
@241	*	Point_2d	#2250	M
@248	*	Predefined_colour	#2210	M
@52	*	Colour		M
	*	Predefined_colour.colour_id	#2210, ”.BLUE.”	M
@248.2		Predefined_colour	#2210	M
		Predefined_colour.colour_id	#2210, ”.BLUE.”	M
@277		Rectangular_area	#2350	M
		Rectangular_area.height	#2350, ”5.”	M
		Rectangular_area.width	#2350, ”10.”	M

Table 5 (continued)

Id	V	Application elements	Value	Req
@179		Item_designation	#440	M
		Item_designation.designator	#440, ”any version id”	M
@259		Product_class	#340	M
		Product_class.level_type	#340, ”any name02”	M
		Product_class.id	#340, ”any description”	M
@259.2		Product_class	#910	M
		Product_class.level_type	#910, ”any name02”	M
		Product_class.id	#910, ”any description”	M
@177		Item	#1820	M
		Item to Item_identification (as id)	@181	M
@177.2		Item	#2370	M
		Item to Item_identification (as id)	@181.2	M
@263	∗	Product_component_relationship	#1000	M
	∗	Product_component_relationship.relation_	#1000,”any name”	M
	∗	type		M
	∗	Product_component_relationship to	@261	M
	∗	Product_component (as relating)		M
	∗	Product_component_relationship to	@261.2	M
	∗	Product_component (as related)		M
@74	∗	Data_element_relationship	#1810	M
	∗	Data_element_relationship.relation_type	#1810, ”any relation type”	M
	∗	Data_element_relationship to	@250	M
	∗	Predefined_data_element (as related)		M
	∗	Data_element_relationship to	@343	M
	∗	User_defined_data_element (as relating)		M
@24		Application_context	#110	M
		Application_context.application_domain	#60, ”electrical design”	M
		Application_context.life_cycle_stage	#110, ”preliminary design”	M
@24.2		Application_context	#670	M
		Application_context.application_domain	#620, ”electrical design”	M
		Application_context.life_cycle_stage	#670, ”preliminary design”	M
@24.3		Application_context	#1920	M
		Application_context.application_domain	#1870, ”electrical design”	M
		Application_context.life_cycle_stage	#1920, ”preliminary design”	M
@24.4		Application_context	#2500	M
		Application_context.application_domain	#2400, ”electrical design”	M
		Application_context.life_cycle_stage	#2500, ”preliminary design”	M
@312		Single_value	#1780	M
		Single_value.name	#1780, ”.BINARY.”	M
		Single_value to Binary_value (as	@30	M

Table 5 (continued)

Id	V	Application elements	Value	Req
		value_of_single_value)		M
@85		Design_discipline_item_definition	#1910	M
		Design_discipline_item_definition.id	#1910, ”any id”	M
		Design_discipline_item_definition.is_	(@24.3)	M
		relevant_for		M
		Design_discipline_item_definition to	@183	M
		Item_version (as		M
		associated_item_version)		M
@85.2		Design_discipline_item_definition	#2490	M
		Design_discipline_item_definition.id	#2490, ”any id”	M
		Design_discipline_item_definition.is_	(@24.4)	M
		relevant_for		M
		Design_discipline_item_definition to	@183.2	M
		Item_version (as		M
		associated_item_version)		M
@214		Numerical_value	#1700	M
		Numerical_value.unit_component	#1690, ”.KILOGRAM.”	M
		Numerical_value.value_component	#1700, ”5.”	M
@40		Class_category_association	#320	M
		Class_category_association.mandatory	.T.	M
		Class_category_association to	@259	M
		Product_class (as		M
		associated_product_class)		M
		Class_category_association to	@317	M
		Specification_category (as category)		M
@40.2		Class_category_association	#890	M
		Class_category_association.mandatory	.T.	M
		Class_category_association to	@259.2	M
		Product_class (as		M
		associated_product_class)		M
		Class_category_association to	@317.2	M
		Specification_category (as category)		M
@221	*	Organization_relationship	#880	M
	*	Organization_relationship.relation_type	#880, ”correspondence”	M
	*	Organization_relationship to	@219	M
	*	Organization (as related)		M
	*	Organization_relationship to	@219.2	M
	*	Organization (as relating)		M
@260	*	Product_class_relationship	#990	M
	*	Product_class_relationship.relation_type	#990, ”any name”	M
	*	Product_class_relationship to	@259	M

Table 5 (continued)

Id	V	Application elements	Value	Req
	*	Product_class (as relating)		M
	*	Product_class_relationship to	@259.2	M
	*	Product_class (as related)		M
@75	*	Data_element_specification	#1140	M
	*	Data_element_specification.definition	#1150, ”definition”	M
	*	Data_element_specification to	@72	M
	*	Data_element_definition (as		M
	*	specification_of)		M
@75.2		Data_element_specification	#1440	M
		Data_element_specification.definition	#1450, ”definition”	M
		Data_element_specification to	@72	M
		Data_element_definition (as		M
		specification_of)		M
@337	*	Text_string	#2340	M
	*	Text_string.character_alignment	#2220, ”.LEFT.”	M
	*	Text_string.character_string	#2340, ”literal”	M
	*	Text_string.rotation	#2380, ”any name”	M
	*	Text_string to Rectangular_area (as	@277	M
	*	surrounding_box)		M
	*	Text_string to Point_2d (as position)	@241	M
	*	Text_string to Text (as containing_text)	@334	M
@122	*	Effectivity_relationship	#870	M
	*	Effectivity_relationship.relation_type	#870, ”any relation type”	M
	*	Effectivity_relationship to Effectivity	@120	M
	*	(as related)		M
	*	Effectivity_relationship to Effectivity	@120.2	M
	*	(as relating)		M
@199	*	Mass	#1700	M
	*	Mass to Numerical_value (as	@214	M
	*	value_of_mass)		M
@120	*	Effectivity	#210	M
	*	Effectivity.concerned_organization	(@219)	M
@120.2		Effectivity	#770	M
		Effectivity.concerned_organization	(@219.2)	M
@250	*	Predefined_data_element	#1650	M
@70	*	Data_element		M
	*	Predefined_data_element to Mass (as	@199	M
	*	data)		M
@72	*	Data_element_definition	#1230	M
	*	Data_element_definition.admitted_level	(#1270, ”TYPICAL”)	M

Table 5 (continued)

Id	V	Application elements	Value	Req
	*	Data_element_definition.id	#1230, ”any id”	M
	*	Data_element_definition.allowed_unit	(#1290)	M
@72.2		Data_element_definition	#1530	M
		Data_element_definition.admitted_level	(#1570, ”.TYPICAL.”)	M
		Data_element_definition.id	#1530, ”any id”	M
		Data_element_definition.allowed_unit	(#1590)	M
@30		Binary_value	#1790	M
		Binary_value.value_of_binary_value	#1790, ”.BINARY.”	M
@271	*	Property_reference	#1230	M
	*	Property_reference.code	#1230, ”code”	M
	*	Property_reference.version	#1310, ”any version id”	M
	*	Property_reference to Class_reference	@43	M
	*	(as name_scope)		M
@183		Item_version	#1900	M
		Item_version.version_id	#1900, ”any version id”	M
		Item_version to Item (as	@177	M
		associated_item)		M
@183.2		Item_version	#2420	M
		Item_version.version_id	#2420,”any version id”	M
		Item_version to Item (as	@177.2	M
		associated_item)		M
@310		Single_device	#2430	M
		Single_device to	@215.3	M
		Object_reference_designation (as id)		M
		Single_device to	@85.2	M
		Design_discipline_item_definition (as		M
		definition)		M
@71	*	Data_element_association	#1730	M
	*	Data_element_association.definitional	.U.	M
	*	Data_element_association to	@343	M
	*	User_defined_data_element (as		M
	*	associated_data_element)		M
	*	Data_element_association to	@85	M
	*	Design_discipline_item_definition (as		M
	*	associated_item)		M
@335	*	Text_appearance	#2180	M
@23	*	Appearance		M
	*	Text_appearance.character_aspect_ratio	#2180, ”BOX_HEIGHT(2.)”	M
	*	Text_appearance.character_rotation_angle	#2180, ”BOX_WIDTH(2.)”	M
	*	Text_appearance.character_scale	#2180, ”BOX_ROTATE_ANGLE(2.)”	M

Table 5 (continued)

Id	V	Application elements	Value	Req
	*	Text_appearance.character_slant_angle	#2180, ”BOX_SLANT_ANGLE(2.)”	M
	*	Text_appearance to Predefined_text_font	@253	M
	*	(as font)		M
	*	Text_appearance to Predefined_colour	@248	M
	*	(as text_colour)		M
@50		Classification_system	#1980	M
		Classification_system.id	#1980, ”any name”	M
@50.2		Classification_system	#1980	M
		Classification_system.id	#1980, ”any id”	M
@219		Organization	#280	M
		Organization.name	#280, ”ProSTEP GmbH”	M
		Organization.id	#280, ”any id”	M
		Organization.organization_type	#280, ”company”	M
@219.2		Organization	#840	M
		Organization.name	#840, ”ProSTEP GmbH”	M
		Organization.id	#840, ”any id”	M
		Organization.organization_type	#840, ”company”	M
@198	*	Marking	#1950	M
	*	Marking.position	(@191)	M
	*	Marking.character_string	#1950, ”any description”	M
	*	Marking to User_defined_data_element	@343	M
	*	(as meaning)		M
	*	Marking to Single_device (as	@310	M
	*	marked_device)		M
	*	Marking to Classification_system (as	@50	M
	*	marking_system)		M
@10	*	Alias_identification	#400	M
	*	Alias_identification.alias_id	#400, ”any version id”	M
	*	Alias_identification to	@261	M
	*	Product_component (as is_applied_to)		M
@38		Cartesian_point	#2090	M
		Cartesian_point.coordinates	(#2090, ”2.”, #2090, ”4.”, #2090,	M
			”6.”)	M
@121	*	Effectivity_assignment	#200	M
	*	Effectivity_assignment.role	#300, ”any role”	M
	*	Effectivity_assignment to	@40	M
	*	Class_category_association (as		M
	*	is_applied_to)		M
	*	Effectivity_assignment to Effectivity	@120	M
	*	(as assigned_effectivity)		M

Table 5 (continued)

Id	V	Application elements	Value	Req
@121.2		Effectivity_assignment	#760	M
		Effectivity_assignment.role	#860, ”any role”	M
		Effectivity_assignment to	@261.2	M
		Product_component (as is_applied_to)		M
		Effectivity_assignment to Effectivity	@120.2	M
		(as assigned_effectivity)		M
@43	*	Class_reference	#1370	M
	*	Class_reference.type_of_repository	#1330, ”IEC 61360 library”	M
	*	Class_reference.supplier	#1390, ”any supplier”	M
	*	Class_reference.code	#1370, ”any code”	M
	*	Class_reference.version	#1410, ”any version”	M
@191	*	Linear_pattern_location	#2060	M
	*	Linear_pattern_location.distance	#2060, ”5.”	M
	*	Linear_pattern_location to	@38	M
	*	Cartesian_point (as start_location)		M
@9	*	Alias_designation	#440	M
	*	Alias_designation to Item_designation	@179	M
	*	(as alias_id)		M
	*	Alias_designation to Product_component	@261.2	M
	*	(as is_applied_to)		M
@261		Product_component	#100	M
		Product_component.is_influenced_by	(@40)	M
		Product_component.instance_required	.T.	M
		Product_component.is_relevant_for	(@24)	M
		Product_component to	@215	M
		Object_reference_designation (as id)		M
@261.2		Product_component	#660	M
		Product_component.is_influenced_by	(@40.2)	M
		Product_component.instance_required	.T.	M
		Product_component.is_relevant_for	(@24.2)	M
		Product_component to	@215.2	M
		Object_reference_designation (as id)		M
@181		Item_identification	#1840	M
		Item_identification.id	#1840, ”any id”	M
@181.2		Item_identification	#2370	M
		Item_identification.id	#2370, ”any id”	M
@68	*	Curve_appearance	#2300	M
	*	Curve_appearance.width	#2300, ”any name”	M
	*	Curve_appearance to	@251	M
	*	Predefined_line_font (as font)		M

Table 5 (concluded)

Id	V	Application elements	Value	Req
	*	Curve_appearance to Predefined_colour	@248.2	M
	*	(as curve_colour)		M
@11	*	Alias_version	#550	M
	*	Alias_version.version_id	#550, ”any version id”	M
	*	Alias_version to Alias_identification	@10	M
	*	(as associated_alias_id)		M
@11.2		Alias_version	#550	M
		Alias_version.version_id	#550, ”any version id”	M
		Alias_version to Alias_designation (as	@9	M
		associated_alias_id)		M
@7		Address	#310	M
@16	*	Annotation_curve	#2220	M
	*	Annotation_curve to Curve_appearance	@68	M
	*	(as assigned_appearance)		M
@251	*	Predefined_line_font	#2310	M
@189	*	Line_font		M
	*	Predefined_line_font.font_id	#2310, ”.CONTINOUS.”	M
@73	*	Data_element_definition_relationship	#1630	M
	*	Data_element_definition_relationship.	#1630, ”any relation type”	M
	*	relation_type		M
	*	Data_element_definition_relationship to	@72	M
	*	Data_element_definition (as related)		M
	*	Data_element_definition_relationship to	@72.2	M
	*	Data_element_definition (as relating)		M
@317		Specification_category	#330	M
		Specification_category.description	#330, ”any description”	M
		Specification_category.implicit_	.T.	M
		exclusive_condition		M
		Specification_category.id	#330, ”any name”	M
@317.2		Specification_category	#900	M
		Specification_category.description	#900, ”any description”	M
		Specification_category.implicit_	.T.	M
		exclusive_condition		M
		Specification_category.id	#900, ”any name”	M
@343	*	User_defined_data_element	#1750	M
	*	User_defined_data_element to	@72	M
	*	Data_element_definition (as definition)		M

6.5.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.6 Product Structure and Classification Structure

Test case summary:

This abstract test case covers application elements of the Unit of Functionality PD1 (Product Structure) and CA1 (Classification Structure).

6.6.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 6

Table 6 – Application elements for ATC Product Structure and Classification Structure

Id	V	Application elements	Value	Req
@227	*	Part	#1	M
	*	Item to Item_identification (as id)	@181	M
@1	*	Accessory	#21	M
	*	Item to Item_identification (as id)	@181.2	M
@313	*	Software	#45	M
	*	Item to Item_identification (as id)	@181.3	M
@177		Item	#60	M
		Item to Item_identification (as id)	@181.4	M
@46	*	Classification_association	#9	M
	*	Classification_association.definitional	.U.	M
	*	Classification_association to Item (as	@227	M
	*	classified_element)		M
	*	Classification_association to	@49	M
	*	Classification_information (as		M
	*	classification)		M
@24		Application_context	#16	M
		Application_context.application_domain	#4, ”electrical design”	M
		Application_context.life_cycle_stage	#16, ”preliminary design”	M
@24.2		Application_context	#30	M
		Application_context.application_domain	#24, ”electrical design”	M
		Application_context.life_cycle_stage	#30, ”preliminary design”	M
@24.3		Application_context	#55	M
		Application_context.application_domain	#50, ”electrical design”	M
		Application_context.life_cycle_stage	#55, ”preliminary design”	M
@24.4		Application_context	#69	M
		Application_context.application_domain	#63, ”electrical design”	M
		Application_context.life_cycle_stage	#69, ”preliminary design”	M
@178	*	Item_definition_relationship	#20	M
	*	Item_definition_relationship.relation_	#20, ”any name”	M
	*	type		M
	*	Item_definition_relationship to	@85	M
	*	Design_discipline_item_definition (as		M
	*	related)		M
	*	Item_definition_relationship to	@85.2	M
	*	Design_discipline_item_definition (as		M
	*	relating)		M
@178.2		Item_definition_relationship	#59	M
		Item_definition_relationship.relation_	#59, ”any name”	M
		type		M

Table 6 (continued)

Id	V	Application elements	Value	Req
		Item_definition_relationship to	@85.3	M
		Design_discipline_item_definition (as		M
		related)		M
		Item_definition_relationship to	@85.4	M
		Design_discipline_item_definition (as		M
		relating)		M
@85		Design_discipline_item_definition	#29	M
		Design_discipline_item_definition.id	#29, ”ddid.any id”	M
		Design_discipline_item_definition.is_	(@24.2)	M
		relevant_for		M
		Design_discipline_item_definition to	@183.2	M
		Item_version (as		M
		associated_item_version)		M
@85.2		Design_discipline_item_definition	#15	M
		Design_discipline_item_definition.id	#15, ”ddid.any id”	M
		Design_discipline_item_definition.is_	(@24)	M
		relevant_for		M
		Design_discipline_item_definition to	@183	M
		Item_version (as		M
		associated_item_version)		M
@85.3		Design_discipline_item_definition	#68	M
		Design_discipline_item_definition.id	#68, ”ddid.any id”	M
		Design_discipline_item_definition.is_	(@24.4)	M
		relevant_for		M
		Design_discipline_item_definition to	@183.4	M
		Item_version (as		M
		associated_item_version)		M
@85.4		Design_discipline_item_definition	#54	M
		Design_discipline_item_definition.id	#54, ”ddid.any id”	M
		Design_discipline_item_definition.is_	(@24.3)	M
		relevant_for		M
		Design_discipline_item_definition to	@183.3	M
		Item_version (as		M
		associated_item_version)		M
@48	∗	Classification_hierarchy	#12	M
	∗	Classification_hierarchy to	@49	M
	∗	Classification_information (as		M
	∗	super_class)		M
	∗	Classification_hierarchy to	@49.2	M
	∗	Classification_information (as		M

Table 6 (continued)

Id	V	Application elements	Value	Req
	*	sub_class)		M
@183		Item_version	#14	M
		Item_version.version_id	#14, ”item_version.version_id01”	M
		Item_version to Item (as	@227	M
		associated_item)		M
@183.2		Item_version	#28	M
		Item_version.version_id	#28, ”item_version.any version_id”	M
		Item_version to Item (as	@1	M
		associated_item)		M
@183.3		Item_version	#53	M
		Item_version.version_id	#53, ”item_version.version_id01”	M
		Item_version to Item (as	@313	M
		associated_item)		M
@183.4		Item_version	#67	M
		Item_version.version_id	#67, ”item_version.version_id00”	M
		Item_version to Item (as	@177	M
		associated_item)		M
@184	*	Item_version_relationship	#19	M
	*	Item_version_relationship.relation_type	#19, ”any name”	M
	*	Item_version_relationship to	@183	M
	*	Item_version (as relating)		M
	*	Item_version_relationship to	@183.2	M
	*	Item_version (as related)		M
@184.2		Item_version_relationship	#58	M
		Item_version_relationship.relation_type	#58, ”any name”	M
		Item_version_relationship to	@183.3	M
		Item_version (as relating)		M
		Item_version_relationship to	@183.4	M
		Item_version (as related)		M
@49	*	Classification_information	#11	M
	*	Classification_information.used_	(@50)	M
	*	classification_system		M
	*	Classification_information.attribute		M
	*	Classification_information.class_value	#11, ”lamp”	M
@49.2		Classification_information	#13	M
		Classification_information.used_	(@50)	M
		classification_system		M
		Classification_information.attribute		M
		Classification_information.class_value	#13, ”ilumination part”	M
@49.3		Classification_information	#38	M

Table 6 (concluded)

Id	V	Application elements	Value	Req
		Classification_information.used_		M
		classification_system		M
		Classification_information.attribute	(@47)	M
		Classification_information.class_value	#38, ".any name"	M
@50		Classification_system	#34	M
		Classification_system.id	#34, "classif_syst.any id"	M
@47	*	Classification_attribute	#37	M
	*	Classification_attribute.attribute_value	()	M
	*	Classification_attribute.id	#37, "classif_attr.any id"	M
@12	*	Alternate_item_relationship	#33	M
	*	Alternate_item_relationship.fulfilled_	#33, ".basis"	M
	*	requirements		M
	*	Alternate_item_relationship to Item (as	@227	M
	*	alternate)		M
	*	Alternate_item_relationship to Item (as	@1	M
	*	base)		M
@43		Class_reference	#11	M
		Class_reference.type_of_repository	#77, "IEC 61360 library"	M
		Class_reference.supplier	#73, "class_ref.supplier"	M
		Class_reference.code	#11, "IDENTIFIER(class_ref.item_	M
			id)"	M
		Class_reference.version	#75, "class_ref.version"	M
@181		Item_identification	#7	M
		Item_identification.id	#7, "item_identification.any id"	M
@181.2		Item_identification	#26	M
		Item_identification.id	#26, "assigned_id"	M
@181.3		Item_identification	#48	M
		Item_identification.id	#48, "item_identification.any id"	M
@181.4		Item_identification	#65	M
		Item_identification.id	#65, "assigned_id"	M

6.6.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.7 Product Structure

Test case summary:

This abstract test case covers application elements of the Unit of Functionality PD1 (Product Structure)

6.7.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 7

Table 7 – Application elements for ATC Product Structure

Id	V	Application elements	Value	Req
@215		Object_reference_designation Item_designation.designator	#310 #13, ”any version id”	M M
@215.2		Object_reference_designation Item_designation.designator	#520 #38, ”any version id”	M M
@215.3		Object_reference_designation Item_designation.designator	#610 #66, ”function unit to obj ref des as id”	M M M
@227		Part Item to Item_identification (as id)	#10 @181	M M
@227.2		Part Item to Item_identification (as id)	#180 @181.2	M M
@227.3		Part Item to Item_identification (as id)	#390 @181.3	M M
@227.4		Part Item to Item_identification (as id)	#630 @181.4	M M
@29		Assembly_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_ relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	#100 #100, ”any id” (@24) @183	M M M M M M M
@270 @28	∗ ∗ ∗ ∗ ∗ ∗	Promissory_usage Assembly_component_relationship Assembly_component_relationship to Device (as related) Assembly_component_relationship to Assembly_definition (as relating)	#170 @310 @29	M M M M M M
@310		Single_device Device to Object_reference_designation (as id) Device to Design_discipline_item_ definition (as definition)	#260 @215 @85	M M M M M
@206	∗ ∗ ∗ ∗ ∗	Next_higher_assembly Assembly_component_relationship to Device (as related) Assembly_component_relationship to Assembly_definition (as relating)	#380 @310.2 @29	M M M M M
@310.2		Single_device	#470	M

Table 7 (continued)

Id	V	Application elements	Value	Req
		Device to Object_reference_designation	@215.2	M
		(as id)		M
		Device to Design_discipline_item_	@85.2	M
		definition (as definition)		M
@320	*	Specified_device	#600	M
	*	Device to Object_reference_designation	@215.3	M
	*	(as id)		M
	*	Device to Design_discipline_item_	@85.3	M
	*	definition (as definition)		M
	*	Specified_device to Device (as	@310	M
	*	related_device)		M
	*	Specified_device to Device (as	@310.2	M
	*	upper_usage)		M
@24		Application_context	#110	M
		Application_context.application_domain	#40, ”electrical design”	M
		Application_context.life_cycle_stage	#110, ”preliminary design”	M
@24.2		Application_context	#350	M
		Application_context.application_domain	#210, ”electrical design”	M
		Application_context.life_cycle_stage	#350, ”preliminary design”	M
@24.3		Application_context	#560	M
		Application_context.application_domain	#420, ”electrical design”	M
		Application_context.life_cycle_stage	#560, ”preliminary design”	M
@24.4		Application_context	#780	M
		Application_context.application_domain	#210, ”electrical design”	M
		Application_context.life_cycle_stage	#780, ”preliminary design”	M
@85		Design_discipline_item_definition	#340	M
		Design_discipline_item_definition.id	#340, ”any id”	M
		Design_discipline_item_definition.is_	(@24.2)	M
		relevant_for		M
		Design_discipline_item_definition to	@183.2	M
		Item_version (as		M
		associated_item_version)		M
@85.2		Design_discipline_item_definition	#550	M
		Design_discipline_item_definition.id	#550, ”any id”	M
		Design_discipline_item_definition.is_	(@24.3)	M
		relevant_for		M
		Design_discipline_item_definition to	@183.3	M
		Item_version (as		M
		associated_item_version)		M
@85.3		Design_discipline_item_definition	#770	M

Table 7 (concluded)

Id	V	Application elements	Value	Req
		Design_discipline_item_definition.id	#770, ”any id”	M
		Design_discipline_item_definition.is_	(@24.4)	M
		relevant_for		M
		Design_discipline_item_definition to	@183.4	M
		Item_version (as		M
		associated_item_version)		M
@88	*	Device_relationship	#590	M
	*	Device_relationship.relation_type	#590, ”device relationship”	M
	*	Device_relationship to Device (as	@310	M
	*	relating)		M
	*	Device_relationship to Device (as	@310.2	M
	*	related)		M
@28		Assembly_component_relationship	#750	M
		Assembly_component_relationship to	@320	M
		Device (as related)		M
		Assembly_component_relationship to	@29	M
		Assembly_definition (as relating)		M
@183		Item_version	#90	M
		Item_version.version_id	#90, ”any version id”	M
		Item_version to Item (as	@227	M
		associated_item)		M
@183.2		Item_version	#250	M
		Item_version.version_id	#250, ”any version id”	M
		Item_version to Item (as	@227.2	M
		associated_item)		M
@183.3		Item_version	#460	M
		Item_version.version_id	#460, ”any version id”	M
		Item_version to Item (as	@227.3	M
		associated_item)		M
@183.4		Item_version	#700	M
		Item_version.version_id	#700, ”any version id”	M
		Item_version to Item (as	@227.4	M
		associated_item)		M
@181		Item_identification	#70	M
		Item_identification.id	#70, ”4711”	M
@181.2		Item_identification	#230	M
		Item_identification.id	#230, ”any id”	M
@181.3		Item_identification	#440	M
		Item_identification.id	#440, ”any id”	M
@181.4		Item_identification	#680	M

Table 7 (concluded)

Id	V	Application elements	Value	Req
		Item_identification.id	#680, ”any id”	M

6.7.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.8 Network Allocation, Allocation, Functional Connectivity and Physical Connectivity

Test case summary:

This abstract test case covers application elements of the Unit of Functionality NA1 (Network Allocation), AL1 (Allocation) and FC1 (Functional Connectivity)

6.8.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 8

Table 8 – Application elements for ATC Network Allocation, Allocation, Functional Connectivity and Physical Connectivity

Id	V	Application elements	Value	Req
@177		Item	#10	M
		Item to Item_identification (as id)	@181	M
@142		Function_version	#430	M
		Function_version.version_id	#430, ”any version id”	M
		Function_version to Functionality (as	@147	M
		base_function)		M
@62	∗	Connectivity_definition_relationship	#1550	M
	∗	Connectivity_definition_relationship.	#1550, ”any name”	M
	∗	relation_type		M
	∗	Connectivity_definition_relationship to	@176	M
	∗	Interface_terminal_connection (as		M
	∗	relating)		M
	∗	Connectivity_definition_relationship to	@175	M
	∗	Interface_terminal_bundle_connection		M
	∗	(as related)		M
@215		Object_reference_designation	#190	M
		Object_reference_designation.designator	#190, ”any version id”	M
@157	∗	Generic_terminal_relationship	#1230	M
	∗	Generic_terminal_relationship.relation_	#1230, ”any name”	M
	∗	type		M
	∗	Generic_terminal_relationship to	@330	M
	∗	Terminal (as related)		M
	∗	Generic_terminal_relationship to	@331	M
	∗	Terminal_bundle (as relating)		M
@169	∗	Interface_port	#800	M
@149	∗	Generic_interface_port		M
	∗	Interface_port.id	#790, ”any name”	M
	∗	Interface_port to Function_definition	@137	M
	∗	(as interface_port_of)		M
@85		Design_discipline_item_definition	#60	M
		Design_discipline_item_definition.id	#80, ”any name”	M
		Design_discipline_item_definition.is_	()	M
		relevant_for		M
		Design_discipline_item_definition to	@183	M
		Item_version (as		M
		associated_item_version)		M
@170	∗	Interface_port_bundle	#870	M
	∗	Interface_port_bundle.id	#850, ”any name”	M
	∗	Interface_port_bundle to	@137	M

Table 8 (continued)

Id	V	Application elements	Value	Req
	*	Function_definition (as		M
	*	interface_port_of)		M
@150	*	Generic_interface_port_relationship	#880	M
	*	Generic_interface_port_relationship.	#880, ”any name”	M
	*	relation_type		M
	*	Generic_interface_port_relationship to	@170	M
	*	Interface_port_bundle (as relating)		M
	*	Generic_interface_port_relationship to	@169	M
	*	Interface_port (as related)		M
@176	*	Interface_terminal_connection	#1400	M
@61	*	Connectivity_definition		M
	*	Interface_terminal_connection.id	#1400, ”any name”	M
	*	Interface_terminal_connection.	(@310)	M
	*	implemented_by		M
	*	Interface_terminal_connection.connected_	(@173)	M
	*	interface_terminal		M
	*	Interface_terminal_connection to	@85	M
	*	Design_discipline_item_definition (as		M
	*	connectivity_of)		M
@247	*	Port_bundle_association	#900	M
	*	Port_bundle_association to	@170	M
	*	Interface_port_bundle (as		M
	*	associated_interface_port_bundle)		M
	*	Port_bundle_association to Port_bundle	@246	M
	*	(as associated_port_bundle)		M
@255	*	Preferred_item_terminal_allocation	#700	M
	*	Preferred_item_terminal_allocation to	@243	M
	*	Port (as functional_definition)		M
	*	Preferred_item_terminal_allocation to	@169	M
	*	Interface_port (as preferred_node)		M
	*	Preferred_item_terminal_allocation to	@254	M
	*	Preferred_item_allocation (as		M
	*	item_allocation)		M
@249	*	Predefined_connection	#1500	M
@58	*	Connection		M
	*	Predefined_connection.id	#1500, ”any name”	M
	*	Predefined_connection.implemented_by	(@310)	M
	*	Predefined_connection.connected_terminal	(@330)	M
	*	Predefined_connection to	@85	M
	*	Design_discipline_item_definition (as		M

Table 8 (continued)

Id	V	Application elements	Value	Req
	*	connectivity_of)		M
@243	*	Port	#790	M
@154	*	Generic_port		M
	*	Port to Single_function_unit (as	@311	M
	*	port_of)		M
	*	Port to Terminal_designation (as id)	@332	M
	*	Port to Interface_port (as	@169	M
	*	associated_interface_port)		M
@246	*	Port_bundle	#850	M
	*	Port_bundle to Single_function_unit (as	@311	M
	*	port_of)		M
	*	Port_bundle to Terminal_designation (as	@332	M
	*	id)		M
	*	Port_bundle to Interface_port_bundle	@170	M
	*	(as associated_interface_port_bundle)		M
@168	*	Interface	#1250	M
	*	Interface.id	#1250, ”any name”	M
	*	Interface.external_access	(@173)	M
	*	Interface to Design_discipline_item_	@85	M
	*	definition (as interface_of)		M
@137		Function_definition	#440	M
		Function_definition.id	#440, ”any name”	M
		Function_definition.is_relevant_for	()	M
		Function_definition to Function_version	@142	M
		(as version)		M
@147		Functionality	#380	M
		Functionality.id	#380, ”any name”	M
@171	*	Interface_port_bundle_connectivity	#940	M
@144	*	Functional_connectivity_definition		M
	*	Interface_port_bundle_connectivity.id	#940, ”any name”	M
	*	Interface_port_bundle_connectivity.	(@170)	M
	*	connected_interface_bundle		M
	*	Interface_port_bundle_connectivity to	@137	M
	*	Function_definition (as connectivity_of)		M
@311		Single_function_unit	#320	M
		Single_function_unit to	@137	M
		Function_definition (as		M
		instanciated_function)		M
		Single_function_unit to	@215	M
		Object_reference_designation (as id)		M

Table 8 (continued)

Id	V	Application elements	Value	Req
@254	*	Preferred_item_allocation	#600	M
	*	Preferred_item_allocation to	@311	M
	*	Single_function_unit (as		M
	*	functional_definition)		M
	*	Preferred_item_allocation to	@85	M
	*	Design_discipline_item_definition (as		M
	*	preferred_item)		M
@332	*	Terminal_designation	#820	M
	*	Terminal_designation.designator	#820, ”any version id”	M
@244	*	Port_allocation	#660	M
	*	Port_allocation to Terminal (as	@330	M
	*	port_implementation)		M
	*	Port_allocation to Port_bundle (as	@246	M
	*	allocated_port)		M
@183		Item_version	#70	M
		Item_version.version_id	#70, ”any version id”	M
		Item_version to Item (as	@177	M
		associated_item)		M
@310		Single_device	#120	M
		Single_device to	@215	M
		Object_reference_designation (as id)		M
		Single_device to	@85	M
		Design_discipline_item_definition (as		M
		definition)		M
@216	*	Offered_function_allocation	#620	M
	*	Offered_function_allocation.relation_	#620, ”any name”	M
	*	type		M
	*	Offered_function_allocation to	@137	M
	*	Function_definition (as		M
	*	offered_functionality)		M
	*	Offered_function_allocation to	@85	M
	*	Design_discipline_item_definition (as		M
	*	performing_item)		M
@60	*	Connectivity_allocation	#630	M
	*	Connectivity_allocation to	@311	M
	*	Single_function_unit (as		M
	*	connectivity_implementation)		M
	*	Connectivity_allocation to Network (as	@204	M
	*	allocated_connectivity_definition)		M
@152	*	Generic_interface_terminal_relationship	#1240	M

Table 8 (continued)

Id	V	Application elements	Value	Req
	*	Generic_interface_terminal_relationship.	#1240, ”any name”	M
	*	relation_type		M
	*	Generic_interface_terminal_relationship	@173	M
	*	to Interface_terminal (as relating)		M
	*	Generic_interface_terminal_relationship	@174	M
	*	to Interface_terminal_bundle (as		M
	*	related)		M
@175	*	Interface_terminal_bundle_connection	#1450	M
	*	Interface_terminal_bundle_connection.id	#1400, ”any name”	M
	*	Interface_terminal_bundle_connection.	(@310)	M
	*	implemented_by		M
	*	Interface_terminal_bundle_connection.	(@174)	M
	*	connected_interface_bundle		M
	*	Interface_terminal_bundle_connection to	@85	M
	*	Design_discipline_item_definition (as		M
	*	connectivity_of)		M
@245	*	Port_association	#910	M
	*	Port_association to Port (as	@243	M
	*	associated_port)		M
	*	Port_association to Interface_port (as	@169	M
	*	associated_interface_port)		M
@330	*	Terminal	#1010	M
@156	*	Generic_terminal		M
	*	Terminal.implemented_by	(@310)	M
	*	Terminal to Single_device (as	@310	M
	*	terminal_of)		M
	*	Terminal to Terminal_designation (as id)	@332	M
	*	Terminal to Interface_terminal (as	@173	M
	*	associated_interface_terminal)		M
@58		Connection	#1280	M
		Connection.id	#1280, ”any name”	M
		Connection.implemented_by	(@310)	M
		Connection.connected_terminal	(@330)	M
		Connection to Design_discipline_item_	@85	M
		definition (as connectivity_of)		M
@173	*	Interface_terminal	#1060	M
@151	*	Generic_interface_terminal		M
	*	Interface_terminal.id	#1060, ”any name”	M
	*	Interface_terminal.uses	(@330)	M
	*	Interface_terminal to	@85	M

Table 8 (continued)

Id	V	Application elements	Value	Req
	∗	Design_discipline_item_definition (as		M
	∗	interface_terminal_of)		M
@59	∗	Connection_bundle	#1350	M
	∗	Connection_bundle.id	#1350, ”any name”	M
	∗	Connection_bundle.implemented_by	(@310)	M
	∗	Connection_bundle.connected_bundle	(@331)	M
	∗	Connection_bundle to	@85	M
	∗	Design_discipline_item_definition (as		M
	∗	connectivity_of)		M
@174	∗	Interface_terminal_bundle	#1210	M
	∗	Interface_terminal_bundle.id	#1210, ”any name”	M
	∗	Interface_terminal_bundle.uses	(@331)	M
	∗	Interface_terminal_bundle to	@85	M
	∗	Design_discipline_item_definition (as		M
	∗	interface_terminal_of)		M
@205	∗	Network_bundle	#980	M
	∗	Network_bundle.id	#980, ”any name”	M
	∗	Network_bundle.connected_bundle	(@246)	M
	∗	Network_bundle to Function_definition	@137	M
	∗	(as connectivity_of)		M
@172	∗	Interface_port_connectivity	#750	M
	∗	Interface_port_connectivity.id	#750, ”any name”	M
	∗	Interface_port_connectivity.connected_	(@169)	M
	∗	interface_port		M
	∗	Interface_port_connectivity to	@137	M
	∗	Function_definition (as connectivity_of)		M
@204	∗	Network	#960	M
	∗	Network.id	#960, ”any name”	M
	∗	Network.connected_port	(@243)	M
	∗	Network to Function_definition (as	@137	M
	∗	connectivity_of)		M
@155	∗	Generic_port_relationship	#890	M
	∗	Generic_port_relationship.relation_type	#890, ”any name”	M
	∗	Generic_port_relationship to	@246	M
	∗	Port_bundle (as relating)		M
	∗	Generic_port_relationship to Port (as	@243	M
	∗	related)		M
@261		Product_component	#520	M
		Product_component.is_influenced_by	()	M
		Product_component.instance_required	.U.	M

Table 8 (concluded)

Id	V	Application elements	Value	Req
		Product_component.is_relevant_for	()	M
		Product_component to	@215	M
		Object_reference_designation (as id)		M
@139	*	Function_interface	#920	M
	*	Function_interface.id	#920, ”any name”	M
	*	Function_interface.external_access	(@170)	M
	*	Function_interface to	@137	M
	*	Function_definition (as interface_of)		M
@181		Item_identification	#10	M
		Item_identification.id	#60, ”any name”	M
@145	*	Functional_connectivity_definition_relationship	#1000	M
	*	Functional_connectivity_definition_	#1000, ”any name”	M
	*	relationship.relation_type		M
	*	Functional_connectivity_definition_	@204	M
	*	relationship to Network (as relating)		M
	*	Functional_connectivity_definition_	@205	M
	*	relationship to Network_bundle (as		M
	*	related)		M
@146	*	Functional_unit_allocation	#610	M
	*	Functional_unit_allocation to	@261	M
	*	Product_component (as		M
	*	function_implementation)		M
	*	Functional_unit_allocation to	@311	M
	*	Single_function_unit (as		M
	*	allocated_functional_unit)		M
@331	*	Terminal_bundle	#1160	M
	*	Terminal_bundle.implemented_by	(@310)	M
	*	Terminal_bundle to Single_device (as	@310	M
	*	terminal_of)		M
	*	Terminal_bundle to Terminal_designation	@332	M
	*	(as id)		M
	*	Terminal_bundle to	@174	M
	*	Interface_terminal_bundle (as		M
	*	associated_interface_terminal_bundle)		M

6.8.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.9 Messages and Properties

Test case summary:

This abstract test case covers application elements of the Unit of Functionality M1 (Messages) and PR1 (Properties)

6.9.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 9

Table 9 – Application elements for ATC Messages and Properties

Id	V	Application elements	Value	Req
@212	*	Notification_relationship	#900	M
	*	Notification_relationship.relation_type	#900, ”any name”	M
	*	Notification_relationship to	@211	M
	*	Notification (as relating)		M
	*	Notification_relationship to	@211.2	M
	*	Notification (as related)		M
@142		Function_version	#60	M
		Function_version.version_id	#60, ”any version id”	M
		Function_version to Functionality (as	@147	M
		base_function)		M
@258	*	Process_variable_system_assignment	#580	M
	*	Process_variable_system_assignment.role	#580, ”preferred equipment”	M
	*	Process_variable_system_assignment to	@256	M
	*	Process_variable (as		M
	*	associated_process_variable)		M
	*	Process_variable_system_assignment to	@328	M
	*	Technical_system (as associated_system)		M
@215		Object_reference_designation	#170	M
		Object_reference_designation.designator	#170, ”any version id”	M
@33	*	Body_length	#1080	M
	*	Body_length to Numerical_value (as	@214	M
	*	value_of_body_length)		M
	*	Body_length.level	#540, ”.MINIMUM.”	M
@312		Single_value	#530	M
		Single_value.name	#530, ”any name”	M
		Single_value to Numerical_value (as	@214	M
		value_of_single_value)		M
@214		Numerical_value	#1040	M
		Numerical_value.unit_component	#1050, ”.METRE.”	M
		Numerical_value.value_component	#1040, ”0.”	M
@214.2		Numerical_value	#1140	M
		Numerical_value.unit_component	#1150, ”.AMPERE.”	M
		Numerical_value.value_component	#1140, ”0.”	M
@214.3		Numerical_value	#1180	M
		Numerical_value.unit_component	#1190, ”.WATT.”	M
		Numerical_value.value_component	#1180, ”0.”	M
@214.4		Numerical_value	#1220	M
		Numerical_value.unit_component	#1230, ”.VOLT.”	M
		Numerical_value.value_component	#1220, ”0.”	M
@214.5		Numerical_value	#1260	M
		Numerical_value.unit_component	#1260, ”.KELVIN.”	M
		Numerical_value.value_component	#1260, ”0.”	M

Table 8 (continued)

Id	V	Application elements	Value	Req
@214.6		Numerical_value	#1460	M
		Numerical_value.unit_component	#1050, ".METRE."	M
		Numerical_value.value_component	#1460, "0."	M
@202	*	Mounting_features	#1460	M
	*	Mounting_features.fixture	#1370, "mounting features	M
	*		specification"	M
@276	*	Rated_voltage	#1220	M
	*	Rated_voltage.type_of_rated_voltage	#1670, ".DC."	M
	*	Rated_voltage to Numerical_value (as	@214.4	M
	*	value_of_rated_voltage)		M
	*	Rated_voltage.level	#540, ".MINIMUM."	M
@256	*	Process_variable	#350	M
	*	Process_variable.id	#350, "any name"	M
@256.2		Process_variable	#480	M
		Process_variable.id	#480, "any name"	M
@135	*	Format_of_value	#1470	M
	*	Format_of_value.value_format	#1490, "value format"	M
	*	Format_of_value.source_document	#1480, "source document"	M
	*	Format_of_value to	@72	M
	*	Data_element_definition (as		M
	*	associated_definition)		M
@124	*	External_library_reference	#1640	M
	*	External_library_reference.id	#1640, "any name"	M
	*	External_library_reference.library_type	#1650	M
@305	*	Signal	#210	M
	*	Signal.associated_parameter	(@256)	M
	*	Signal.preferred_equipment	(@137)	M
	*	Signal to Signal_designation (as id)	@306	M
@305.2		Signal	#360	M
		Signal.associated_parameter	(@256.2)	M
		Signal.preferred_equipment	(@137)	M
		Signal to Signal_designation (as id)	@306	M
@53	*	Component_colour	#1400	M
	*	Component_colour.colour_id	#1400, "component colour"	M
@308	*	Signal_system_assignment	#610	M
	*	Signal_system_assignment.role	#610, "preferred equipment"	M
	*	Signal_system_assignment to Signal (as	@305	M
	*	associated_signal)		M
	*	Signal_system_assignment to	@328	M
	*	Technical_system (as associated_system)		M

Table 9 (continued)

Id	V	Application elements	Value	Req
@250		Predefined_data_element Predefined_data_element to Body_breadth (as data)	#950 @31	M M M
@250.2		Predefined_data_element Predefined_data_element to Body_height (as data)	#950 @32	M M M
@250.3		Predefined_data_element Predefined_data_element to Body_length (as data)	#950 @33	M M M
@250.4		Predefined_data_element Predefined_data_element to Material (as data)	#950 @200	M M M
@250.5		Predefined_data_element Predefined_data_element to Mounting_features (as data)	#950 @202	M M M
@250.6		Predefined_data_element Predefined_data_element to Component_colour (as data)	#950 @53	M M M
@250.7		Predefined_data_element Predefined_data_element to Rated_current (as data)	#950 @274	M M M
@250.8		Predefined_data_element Predefined_data_element to Rated_power (as data)	#950 @275	M M M
@250.9		Predefined_data_element Predefined_data_element to Rated_voltage (as data)	#950 @276	M M M
@250.10		Predefined_data_element Predefined_data_element to Storage_temperature (as data)	#950 @322	M M M
@250.11		Predefined_data_element Predefined_data_element to Outside_diameter (as data)	#950 @222	M M M
@137		Function_definition Function_definition.id Function_definition.is_relevant_for Function_definition to Function_version (as version)	#70 #70, ”any name” () @142	M M M M M
@72		Data_element_definition Data_element_definition.admitted_level Data_element_definition.id Data_element_definition.allowed_unit	#1540 (#1580, ”.MINIMUM.”) #1540, ”any name” (#1600)	M M M M

Table 9 (continued)

Id	V	Application elements	Value	Req
@32	*	Body_height	#1110	M
	*	Body_height to Numerical_value (as	@214	M
	*	value_of_body_height)		M
	*	Body_height.level	#540, ".MINIMUM."	M
@329	*	Technical_system_relationship	#200	M
	*	Technical_system_relationship.relation_	#200, "any name"	M
	*	type		M
	*	Technical_system_relationship to	@328	M
	*	Technical_system (as relating)		M
	*	Technical_system_relationship to	@328.2	M
	*	Technical_system (as related)		M
@328	*	Technical_system	#190	M
	*	Technical_system.contains	(@305)	M
	*	Technical_system to	@215	M
	*	Object_reference_designation (as id)		M
@328.2		Technical_system	#150	M
		Technical_system.contains	(@305.2)	M
		Technical_system to	@215	M
		Object_reference_designation (as id)		M
@147		Functionality	#10	M
		Functionality.id	#10, "any name"	M
@217	*	Operating_temperature	#1260	M
	*	Operating_temperature to	@214.5	M
	*	Numerical_value (as temperature)		M
	*	Operating_temperaure.level	#540, ".MINIMUM."	M
@200	*	Material	#1340	M
	*	Material.substance	#1340, "material specification"	M
@222	*	Outside_diameter	#1460	M
	*	Outside_diameter to Numerical_value (as	@214.6	M
	*	value_of_outside_diameter)		M
	*	Outside_diameter.level	#540, ".MINIMUM."	M
@274	*	Rated_current	#1140	M
	*	Rated_current.type_of_rated_current	#1670, ".DC."	M
	*	Rated_current to Numerical_value (as	@214.2	M
	*	value_of_rated_current)		M
	*	Rated_current.level	#540, ".MINIMUM."	M
@71		Data_element_association	#930	M
		Data_element_association.definitional	.U.	M
		Data_element_association to	@250	M
		Predefined_data_element (as		M
		associated_data_element)		M
		Data_element_association to	@137	M
		Function_definition (as associated_item)		M

Table 9 (concluded)

Id	V	Application elements	Value	Req
@306	*	Signal_designation	#310	M
	*	Signal_designation.designator	#310, ”any version id”	M
@309	*	Signal_value	#640	M
	*	Signal_value.id	#690, ”any name”	M
	*	Signal_value to Single_value (as	@312	M
	*	value_of_signal)		M
	*	Signal_value to Signal (as	@305	M
	*	associated_signal)		M
@257	*	Process_variable_relationship	#570	M
	*	Process_variable_relationship.relation_	#570, ”any name”	M
	*	type		M
	*	Process_variable_relationship to	@256	M
	*	Process_variable (as relating)		M
	*	Process_variable_relationship to	@256.2	M
	*	Process_variable (as related)		M
@322	*	Storage_temperature	#1260	M
	*	Storage_temperature to Numerical_value	@214.5	M
	*	(as temperature)		M
	*	Storage_temperature.level	#540, ”.MINIMUM.”	M
@50		Classification_system	#1430	M
		Classification_system.id	#1430, ”any name”	M
@211	*	Notification	#710	M
	*	Notification.id	#710, ”any name”	M
	*	Notification.trigger	(@305)	M
@211.2		Notification	#820	M
		Notification.id	#820, ”any name”	M
		Notification.trigger	(@305.2)	M
@275	*	Rated_power	#1180	M
	*	Rated_power.type_of_rated_power	#1670, ”.TRUE_POWER.”	M
	*	Rated_power to Numerical_value (as	@214.3	M
	*	value_of_rated_power)		M
	*	Rated_power.level	#540, ”.MINIMUM.”	M
@31	*	Body_breadth	#1040	M
	*	Body_breadth to Numerical_value (as	@214	M
	*	value_of_body_breadth)		M
	*	Body_breadth.level	#540, ”.MINIMUM.”	M
@307	*	Signal_relationship	#490	M
	*	Signal_relationship.relation_type	#490, ”any name”	M
	*	Signal_relationship to Signal (as	@305	M
	*	relating)		M
	*	Signal_relationship to Signal (as	@305.2	M
	*	related)		M

6.9.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

Annex A
(normative)

Conformance classes

A.1 Conformance class 01

To conform to conformance class 01 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.2 Conformance class 02

To conform to conformance class 02 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.3 Conformance class 03

To conform to conformance class 03 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.4

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.4 Conformance class 04

To conform to conformance class 04 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.5 Conformance class 05

To conform to conformance class 05 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.6 Conformance class 06

To conform to conformance class 06 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.7 Conformance class 07

To conform to conformance class 07 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.8 Conformance class 08

To conform to conformance class 08 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.9 Conformance class 09

To conform to conformance class 09 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.10 Conformance class 10

To conform to conformance class 10 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.11 Conformance class 11

To conform to conformance class 11 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.12 Conformance class 12

To conform to conformance class 12 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.13 Conformance class 13

To conform to conformance class 13 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

A.14 Conformance class 14

To conform to conformance class 14 of ISO 10303–212, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.6

— atc6.7

— atc6.8

— atc6.9

Annex B
(normative)

Information object registration

NOTE - As this document is a working draft, there is no such thing as an information object registration necessary.

Annex C
(normative)

Postprocessor input specification file names

The postprocessor input specifications for each test case is supplied electronically on magnetic media (floppy diskette). Table C.1 lists the file name of the postprocessor input specification that is associated with the postprocessor subclause of a test case.

Table C.1 – Postprocessor input specification file names

Subclause	Test case	File name
6.1	atc6.1: Conditions, External Reference, Work Management and Organizational Data	atc6_1.p21
6.2	atc6.2: Configuration Management	atc6_2.p21
6.3	atc6.3: Function Structure	atc6_3.p21
6.4	atc6.4: Installation, Course and Schematic Documentation	atc6_4.p21
6.5	atc6.5: Remark, Effectivity Data and Properties	atc6_5.p21
6.6	atc6.6: Product Structure and Classification Structure	atc6_6.p21
6.7	atc6.7: Product Structure	atc6_7.p21
6.8	atc6.8: Network Allocation, Allocation, Functional Connectivity and Physical Connectivity	atc6_8.p21
6.9	atc6.9: Messages and Properties	atc6_9.p21

Annex D
(informative)

Sample executable test suite

For each abstract test case in this document, a sample executable version is available. This executable version contains the test cases encoded according to ISO 10303–21 (i.e., they are executable by a postprocessor implementation using ISO 10303–21), and all values are set to the 'suggested' ones (see clause 6 of this part of ISO 10303).

This sample executable test suite is distributed in electronic form.

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