

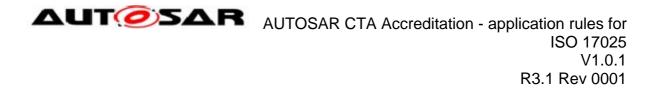
Revision

AUTOSAR CTA Accreditation - application rules for ISO 17025 V1.0.1 R3.1 Rev 0001

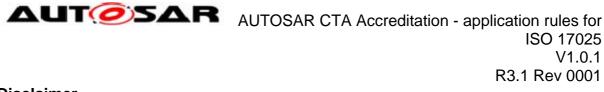
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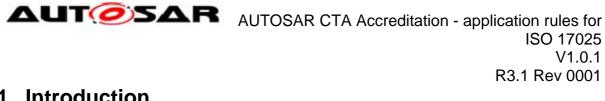
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1 Introduction

This document sets out the specific application rules when applying ISO 17025 to the assessment of a candidate organization applying for the role of a first party CTA (see [1] for the role definition). In addition, the requirements of ISO 17025 (which is mainly targeted at the test execution) are extended according to the tasks of a first party CTA, in particular with respect to development of a CTS.

Interpretation and applicability of all references to test activities, test equipment, test tools and calibration in this document and all referenced documents therein (section 1.1.2) are limited in scope to the AUTOSAR Conformance Test System (see [1]).

In consequence this document can be used as a cross-reference for the assessor during the assessment of a first party CTA candidate.

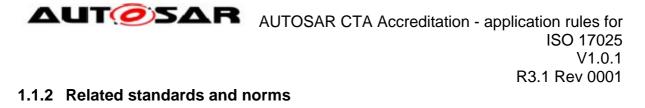
The objective of this document is to set the application rules for first party CTAs. Being accredited to these rules entitles a first party CTA to pursue the same scope of business that applies to third party CTAs.

The assessment is the core part of the AUTOSAR accreditation process, which is fully detailed in [3].

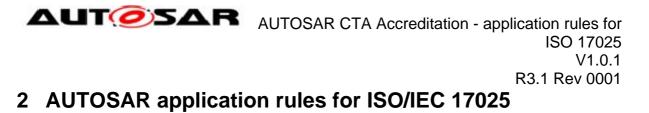
1.1 Related Documentation

1.1.1 Input documents

- [1] Conformance Test Process Definition Path A-C https:/svn2.autosar.org/repos2/22 Releases AUTOSAR DS CT Path A-C.pdf
- [2] Conformance Test Process Definition Path D https:/svn2.autosar.org/repos2/22 Releases AUTOSAR_DS_CT Path D.pdf
- [3] AUTOSAR Conformance Test Agency Accreditation https:/svn2.autosar.org/repos2/22 Releases AUTOSAR DS Accreditation.pdf
- [4] AUTOSAR CTA Accreditation application rules for ISO/IEC Guide 65 https:/svn2.autosar.org/repos2/22 Releases AUTOSAR_DS_Accreditation - application of ISO Guide 65.doc
- [5] AUTOSAR Glossary https:/svn2.autosar.org/repos2/22 Releases AUTOSAR Glossary.pdf



- [6] ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories
- [7] ISO/IEC 17000:2004 Conformity assessment Vocabulary and general principles
- [8] ISO/IEC 17011:2004 Conformity assessment General requirements for accreditation bodies accrediting conformity assessment bodies
- [9] ISO/IEC GUIDE 65:1996 General requirements for bodies operating product certification systems



The specific requirements are listed below with direct reference to the individual clauses of ISO/IEC 17025 [6].

Requirements in ISO/IEC 17025 AUTOSAR interpretation	Guidance
1 Scope	
Clause 1 of ISO/IEC 17025 (including all sub-clauses) applies with the following general exceptions and comments:	
- The scope of these AUTOSAR application rules comprises the competence of the assessed organization to fulfill the tasks of a CTA according to [1], in order to be capable to declare conformance".	
 Aspects with reference to calibration services are in general not applicable. 	All sections and requirements that are specific to calibration services only shall be ignored. Nevertheless sections and requirements dealing with the calibration of test equipment are valid.
	For the purposes of this document, calibration is defined as "the act of checking or adjusting (by comparison with a standard) the accuracy of a measuring instrument" (<u>http://dict.die.net/calibration/</u>). This differs from other usages of the term calibration within AUTOSAR.
 All aspects with reference to sampling are out of scope. 	All sections and requirements that are specific to sampling only shall be ignored.
 The term laboratory shall be understood in a generic way, i.e. denoting the test operations (processes and resources) of the assessed organization. There shall be no restrictions to the organizational structure of these test operations as long as the requirements on impartiality specified elsewhere in this document (including the applicable sections of ISO/IEC 17025) are satisfied. 	For example, the distribution of testing activities across legal entities of the assessed organization must not be taken as a blocking point to deny accreditation.

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Requirements in ISO/IEC 17025 AUTOSAR interpretation	Guidance
- This document is intended as the basis for assessing the relevant competences of the organization in focus.	An AUTOSAR accreditation body shall utilize this document for assessing a candidate for the first party CTA role. Note: there shall be no restriction to use this document for other purposes, such as the assessment of a third party CTA that intends to offer accredited test execution services
- The notion of the 'customer', referred to as product supplier in the AUTOSAR context, is applicable to external as well as internal customers.	In most cases, this document will be used to assess first party CTAs. In this case the customer will be part of the same organization.
2 Normative references	
Clause 2 of ISO/IEC 17025 applies without change.	
3 Terms and definition	
Clause 3 of ISO/IEC 17025 applies with the following addition:	The following terms are most important throughout this document: CTA – Conformance Test Agency
In addition, the definitions of some AUTOSAR specific terms are indispensable for understanding this document. These terms are defined in detail in the AUTOSAR glossary [5].	CTS – Conformance Test Suite
4 Management Requirements	
4.1 Organization	
Clause 4.1 of ISO/IEC 17025 (including all sub-clauses) applies without change.	
4.2 Management System	
Clause 4.2 of ISO/IEC 17025 (including all sub-clauses) applies without change.	
4.3 Document control	
Clause 4.3 of ISO/IEC 17025 (including all sub-clauses) applies without change.	

In case of First Party CTA internal

systems and organizations.

activities are covered only by internal

Clause 4.4 of ISO/IEC 17025 (including all sub-clauses) applies with the following comments:

In case of a first party CTA the customer (AUTOSAR product supplier) requesting the conformance test execution and/or declaration will be from within the same organization (internal). Hence, transaction activities related to tendering and contracting are not applicable. Nevertheless the internal test requests and subsequent activities shall be well documented.

4.5 Subcontracting of tests [...]

Clause 4.5 of ISO/IEC 17025 (including all sub-clauses) applies with the following comments:

In case of employing a subcontractor the CTA must ensure the competency of the subcontracted party, as the responsibility remains with the CTA. This principle also applies to the development of the CTS.

All references to the term 'Customer' mean internal customers in this context. (A 'customer' in AUTOSAR terms is a 'product supplier')

4.6 Purchasing services and supplies

Clause 4.6 of ISO/IEC 17025 (including all sub-clauses) applies without change.

4.7 Services to the customer

Clause 4.7 of ISO/IEC 17025 (including all sub-clauses) applies without change.

In case of a first party CTA applying conformance test path B (see [1]), the CTA has to establish an improvement and feedback loop to the CTS supplier.

In case of First Party CTA internal activities are covered only by internal systems and organizations.

4.8 Complaints

Requirements in ISO/IEC 17025 AUTOSAR interpretation	Guidance
Clause 4.8 of ISO/IEC 17025 applies without change.	In case of First Party CTA internal activities are covered only by internal
	systems and organizations.

4.9 Control of nonconforming testing [...]

Clause 4.9 of ISO/IEC 17025 (including all sub-clauses) applies without change.

4.10 Improvement

Clause 4.10 of ISO/IEC 17025 applies without change.

4.11 Corrective action

Clause 4.11 of ISO/IEC 17025 (including all sub-clauses) applies without change.

4.12 Preventive action

Clause 4.12 of ISO/IEC 17025 (including all sub-clauses) applies without change.

4.13 Control of records

Clause 4.13 of ISO/IEC 17025 (including all sub-clauses) applies without change.

4.14 Internal audits

Clause 4.14 of ISO/IEC 17025 (including all sub-clauses) applies without change.

4.15 Management reviews

Clause 4.15 of ISO/IEC 17025 (including all sub-clauses) applies without change.

5 Technical requirements

5.1 General

Clause 5.1 of ISO/IEC 17025 (including all sub-clauses) applies with the exception of sampling (which is not applicable).

Some factors such as measurement traceability will most likely be of a minor importance, yet are not completely ignorable (e.g. measurement of timer expiry). For details please see Appendix B

5.2 Personnel

5.2.1

Clause 5.2.1 of ISO/IEC 17025 applies with AUTOSAR specific amendments

5.2.2

Clause 5.2.2 of ISO/IEC 17025 applies without changes

5.2.3

Clause 5.2.3 of ISO/IEC 17025 applies without changes

5.2.4

Clause 5.2.4 of ISO/IEC 17025 applies without changes

5.2.5

Clause 5.2.5 of ISO/IEC 17025 applies without changes

5.3 Accommodation and environmental conditions

Clause 5.3 of ISO/IEC 17025 (including all sub-clauses) applies without changes

5.4 Test [...] methods and method validation

5.4.1 General

Clause 5.4.1 of ISO/IEC 17025 applies without changes

5.4.2 Selection of methods

Clause 5.4.2 of ISO/IEC 17025 applies with the following comments:

The test execution follows in large parts the procedures set by the CTS. Therefore the CTS from an accredited CTA has to be used. The AUTOSAR conformance test process definition [1] and all AUTOSAR specifications of the valid AUTOSAR release have to be applied.

The CTS can be developed within the same company (conformance test path C) or sourced from another CTA (conformance test path B).

For details, see the conformance test process definition [1].

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AUTOSAR interpretation	Guidance
5.4.3 Laboratory-developed methods	
Clauses 5.4.3 of ISO/IEC 17025 applies with the following comments:	Good engineering practice would be, for example, the application of an appropriate quality or maturity model to the software
If a CTS is developed in house, the development process of the CTS shall be documented and comply with good engineering practice. If CTS is purchased from another CTA, responsibility lies with the supplying CTA", which, however, has to fulfill the same requirements.	development process.
5.4.4 Non-standard methods	
Clauses 5.4.4 of ISO/IEC 17025 applies with the following comments:	Normally there will be no need for any deviation from the methods defined by AUTOSAR.
If a non-standard method is applied	

5.4.5 Validation of methods

Clause 5.4.5 of ISO/IEC 17025 applies without changes

instead of using a standard method, there shall be evidence and written statement that the standard method is not applicable.

Sub-section 5.4.5.3 - Note 1 is not applicable. Requirements and methods as defined by AUTOSAR shall apply. **5.4.6 Estimation of uncertainty of measurement**

Clause 5.4.6 of ISO/IEC 17025 (including all sub-clauses) applies without changes.

5.4.7 Control of data

Clause 5.4.7 of ISO/IEC 17025 (including all sub-clauses) applies without changes

5.5 Equipment

Clause 5.5 of ISO/IEC 17025 (including all sub-clauses) applies without changes

Calibration, although needed for proper functioning of target hardware and test equipment, has no relevance for AUTOSAR conformance testing.



Requirements in ISO/IEC 17025 AUTOSAR interpretation

Guidance

5.6 Measurement traceability

5.6.1 General

Clause 5.6.1 of ISO/IEC 17025 applies without changes

5.6.2 Specific requirements

5.6.2.1 Calibration

Clause 5.6.2.1 of ISO/IEC 17025 is not applicable

Calibration, although needed for proper functioning of target hardware and test equipment, has no relevance for AUTOSAR conformance testing.

There will be no need for reference standards and material within the context of AUTOSAR

Sampling is out of scope for AUTOSAR

conformance testing

conformance testing¹.

5.6.2.2 Testing

Clause 5.6.2.2 of ISO/IEC 17025 (including all sub-clauses) applies without changes

5.6.3 Reference standards and reference materials

Clause 5.6.3 of ISO/IEC 17025 is not applicable

5.7 Sampling

Clause 5.7 of ISO/IEC 17025 (including all sub-clauses) is not applicable

5.8 Handling of test [...] items

Clause 5.8 of ISO/IEC 17025 (including all sub-clauses) applies without changes

5.9 Assuring the quality of test [...] results

Clause 5.9 of ISO/IEC 17025 (including all sub-clauses) applies without changes

5.10 Reporting the results

5.10.1 General

¹ Sampling is subject to quantity testing of physical goods, but not to AUTOSAR Conformance Testing. In particular, software is built once and thereafter is immutable. Document ID 244: AUTOSAR_DS_Accreditation_application_of_ISO_17025 13 of 17

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Requirements in ISO/IEC 17025 AUTOSAR interpretation	Guidance
Clause 5.10.1 of ISO/IEC 17025 (including all sub-clauses) applies with the following constraint:	The format of the test report shall be recognizable regardless of internal or external customer relation.
The test results shall be documented based on the templates defined within the AUTOSAR Conformance Test process definition [1].	
5.10.2 Test reports []	
Clause 5.10.2 of ISO/IEC 17025 is not applicable Templates provided by AUTOSAR shall be used for test reports 5.10.3 Test reports	Instead the template provided by AUTOSAR shall be used for test reports
5.10.3.1	
Clause 5.10.3.1 of ISO/IEC 17025 applies without changes	It is necessary to document any deviations and complementary information that helps to understand the test conditions and results (e.g. for reproducibility)
5.10.3.2	(
Clause 5.10.3.2 of ISO/IEC 17025 is not applicable	Sampling is not applicable w.r.t. AUTOSAR conformance testing
5.10.4 Calibration certificates	
Clause 5.10.4 of ISO/IEC 17025 (including all sub-clauses) is not applicable	Calibration services are out of scope for AUTOSAR conformance testing.
5.10.5 Opinions and interpretations	
Clause 5.10.5 of ISO/IEC 17025 applies without changes	
5.10.6 Testing [] results obtained from subcontractors	
Clause 5.10.6 of ISO/IEC 17025 applies without changes	
5.10.7 Electronic transmission of results Clause 5.10.7 of ISO/IEC 17025 applies without changes	
5.10.8 Format of reports and certificates	

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Requirements in ISO/IEC 17025	Guidance
AUTOSAR interpretation	
Clause 5.10.8 of ISO/IEC 17025 applies without changes	For this purpose an AUTOSAR test report template is available
For this purpose an AUTOSAR test report	
template is available	
5.10.9 Amendments to test reports []	

Clause 5.10.9 of ISO/IEC 17025 applies without changes



Appendix A Acronyms and Abbreviations

- Conformance Test(ing) СТ
- Conformance Test Agency СТА
- Conformance Test Suite CTS



Appendix B Personnel requirements

	Minimum		Scope				CTA role	
AUTOSAR application rules for ISO/IEC 17025 clause 5.2 "Personnel"	Know - ledge	Exper- ience	BSW	sw-c	RTE	Tools	First party CTA with CTS	First party CTA without CTS
AUTOSAR basics according to the valid release: - Software architecture - BSW - VFB concept, e.g. Communication paradigms (Client/Server, Sender/Reciever) - AUTOSAR methodology & exchange formats/templates - AUTOSAR RTE interfaces and								
generation process	2	1	Yes	Yes	Yes	Yes	Yes	Yes
Real-time operating systems (preemption, scheduling) Micro Controller and Networking	2	2	Yes	Yes	Yes	Yes	Yes	Yes
(automotive bus-systems)	2	1	Yes	No	Yes	Yes	Yes	Yes
Formal test notations, in particular TTCN- 3	3	1	Yes	No	Yes	Yes	Yes	Yes
XML	2	2	Yes	Yes	Yes	Yes	Yes	No
Software Modeling (e.g. UML2)	2	1	Yes	Yes	Yes	Yes	Yes	No
Embedded Software programming (min C)	2	2	Yes	Yes	Yes	Yes	Yes	Yes
-								
Embedded Software testing	3	3	Yes	Yes	Yes	Yes	Yes	Yes
Build environment for Embedded Systems (make file, cross-compiler, linker, map-file)	2	2	Yes	Yes	Yes	Yes	Yes	Yes

Knowledge	Tracked experience
low knowledge	1 low experience
basic knowledge	2 basic experience 1-3 years
high knowledge	3 high = professional

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