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Technical Report

for the testing of the

Tool Percipient and VersIC

Applicant

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Test Body

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Modification History

Rev.	Status	Date	Author	Modification / Description
1.0	Active	2020-05-15	Thomas Maier	-

Table 1: Modification history

List of Abbreviations

Abbreviation	Description
ASIL	Automotive Safety Integrity Level
FMEDA	Failure Mode, Effects and Diagnosis Analysis
FSM	Functional Safety Management
QMS	Quality Management System
ToE	Target of Evaluation

Table 2: Abbreviations

1 Target of Evaluation (ToE)

In November 2019 Methodics, Inc requested TÜV SÜD Rail GmbH to test and certify the tools Percipient and VersIC according to the standard listed in clause 3 of this report. The project number related to this Technical Report is 72155525 (SO# TS America), TSR-No. 717521030.

Percipient is an IP Lifecycle Management (IPLM) platform, providing control over the design and integration of both internal and external design elements including libraries, new analog and digital design, and standalone IP.

VersIC is a Design Data Management tool for IC Designers and provides a unified interface to modern software configuration management (SCM) tools for Cadence's Design Framework.

The tools Percipient and VersIC are designed to be suitable to support development of elements and items up to ASIL D.

2 Scope of Testing

2.1 Test Specimen

The subject of this report is the consideration of certain tool classification documents and manuals for the IP reuse and SoC design management, referring to the tools Percipient and VersIC.

The intention of the tool classification documents is to provide an analysis of potential tool errors and a rationale of how these errors can be detected. Methodics, Inc's preconception is that any tool might introduce faults into the tool outputs and thus the vehicle on-board elements and items to be developed and therefore determined both tools to have TI2 in general. The potential faults of each tool are analyzed in a tool FMEA inside the respective Tool Classification Analysis /D1/. For each tool at least one measure to prevent or detect faults in the tool output is given and a justification for the determination of TD1 is derived. These measures are specified as user instructions, or assumptions of use, in the safety manual for both tools /D2/. The task for TÜV SÜD is to analyze whether it is reasonable to predetermine TCL1 for all tools considering the suggested measures. Furthermore, the provided documentation shall be confirmed to be compliant with ISO 26262-8 clause 11.

2.2 Nomenclature of Percipient and VersIC

The product tested is identified by hardware and software version as follows:

Name	Versions
Percipient	2.34
VersIC	1.10.37

Table 3: Identification of Percipient and VersIC

3 Standards and Guidelines

3.1 Functional Safety Standards

No.	Reference	Description
/N1/	ISO 26262-2:2018	Road vehicles — Functional safety — Part 2: Management of functional safety
/N2/	ISO 26262-8:2018	Road vehicles — Functional safety — Part 8: Supporting processes

Table 4: Functional safety standards

3.2 Quality Management System

No.	Reference	Description
[M1]	QMS	Quality Management System TÜV SÜD Rail GmbH
	TR_RA_P_04.50	Test Program Functional Safety
	TR_RA_P_04.51	Definition Scope of testing
	TR_RA_P_04.07	Product modification
	TR_RA_P_04.52	Concept Phase & Safety Lifecycle
	TR_RA_P_04.53	Detail Phase Hardware (HW)
	TR_RA_P_04.54	Detail Phase Software (SW)
	TR_RA_P_04.55	Safety Manual
	TR_RA_P_04.56	Result of Testing (R)
[M2]	D-IS-11190-01-00	DAkkS accreditation according to DIN EN ISO/IEC 17020:2012; inspection body type A
[M3]	D-PL-11190-08-00	DAkkS accreditation according to DIN EN ISO 17025:2018 / EN ISO/IEC 17025:2017

Table 5: Quality Management System

4 Documentation and Results

4.1 Results according to ISO 26262-8:2018, clause 11: Confidence in the use of software tools

Both the general manuals the safety manual for Percipient and VersIC are relevant for achieving TCL1 in using the different tools. The document /D1/ provides the results of the tool classification analysis and detailed instructions on review activities, lifecycle activities, and handling of error messages, to achieve TD1, and consequently TCL1.

User interaction is done by means of a Service desk web application, where customers submit bug reports, change requests, etc.

Further ensuring the quality are internal tool development processes, supported by tool JIRA for traceability of requirements to testing, and for change and release management.

Compliance has been evaluated by document review (see [R1]) and audit (see [R2]).

The following documents were reviewed to evaluate compliance with ISO 26262-8:2018, clause 11 for the Percipient and VersIC documentation:

Assessment base

No.	Title	Document number / ID	Rev.	Date
The following documents were issued by the customer:				
/D1/	Tool FMEA	FMEA Percipient Versic_2020-03-25.xlsx	1.3	2020-03-25
/D2/	Percipient and VersIC Functional Safety Manual	Percipient VersIC Safety Manual_v1-3.docx	1.3	2020-04-07

Table 6: Documentation provided by Methodics

Result:

No.	Title	Document number / ID	Rev.	Date
The following test reports were issued by TÜV SÜD Rail GmbH:				
[R1]	Review Protocol Percipient and VersIC documentation	revrep_Percipient_VersIC_v1-0e.docx	1.0e	2020-04-08
[R2]	Tool Audit Checklist	Methodics_ToolAuditChecklist_ISO26262-2018.docx	1.1	2020-04-20

Table 7: Evaluation results

4.2 Detailed Evaluation of the Assessment Base

No.	Question	Status
Q01	Is the identification and version number of the tool clearly indicated? [ISO 26262-8 11.4.4.1-a)]	OK
Q02	Are the configurations viable for safe development detailed? [ISO 26262-8 11.4.4.1-b)]	OK
Q03	Are constraints for the use in safe development detailed? [ISO 26262-8 11.4.5.1-c)]	OK
Q04	Is the purpose of the tool described? [ISO 26262-8 11.4.5.1-a)]	OK
Q05	Are safety relevant use cases described? [ISO 26262-8 11.4.4.1-c)]	OK
Q06	Are the inputs and outputs of the tool described? [ISO 26262-8 11.4.5.1-b)]	OK
Q07	Are the requirements on the tool environment detailed? [ISO 26262-8 11.4.4.1-d), 11.4.4.2-c)]	OK
Q08	Are compatibilities and incompatibilities to other tools and/or versions described? [ISO 26262-8 11.4.4.1-d), 11.4.4.2-c)]	OK
Q09	Are the features, functions and technical properties of the tool specified or a reference made to a document containing them? [ISO 26262-8 11.4.4.2-a)]	OK
Q10	Are User manual and guides available? [ISO 26262-8 11.4.4.2-b)]	OK
Q11	Are safety issues adequately highlighted in the user manual, if not contained in the safety manual? [In line with ISO 26262-8 10.2, ISO 26262-2 6.4.6.4 -b)]	OK
Q12	Is the behaviour under anomalous operating conditions considered? [ISO 26262-8 11.4.4.2-d)]	OK
Q13	Are known software tool malfunctions and the appropriate safeguards, avoidance or workaround measures described? [ISO 26262-8 11.4.4.2-e)]	OK
Q14	Are the measures for the detection of malfunctions and the corresponding erroneous output of the software tool identified? [ISO 26262-8 11.4.4.2-f)]	OK
Q15	Is the safety manual precise and concise, structured in a clear manner, easy to understand by the intended users, and maintainable? [ISO 26262-8 10.4.3]	OK



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No.	Question	Status
Q16	Does the safety manual contain an appropriate title, an author and an approver, a unique identification of its versions, a change history, and a status? [ISO 26262-8 10.4.5]	OK
Q17	Does the safety manual contain information for communicating and receiving up-to-date safety relevant information on the tool? [In line with ISO 26262-2 7]	OK

Judgment: The normative requirements are fulfilled.

Constraints: According to ISO 26262-8:2018 11.4.2, as the confidence level evaluation of Percipient and VersIC was performed independently from the development of a particular safety-related item or element, the validity of this predetermined Tool Confidence Level shall be verified prior to their use in the development of a particular item or element.

5 Testing Body

This report is based on the accreditation of the testing laboratory for safety components; see table “Quality Management System”.

6 Summary

The test results of clause 4 showed that the tools Percipient and VersIC can be employed as TCL1 tools, in compliance with the requirements of the standards and guidelines referenced in clause 3, if the constraints and conditions defined in the safety manual /D2/ are met.

Based on these considerations, the tools Percipient and VersIC are suitable to be used in safety-related development projects according to ISO 26262:2018 for any ASIL level.

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