

APPLICATION FOR ESCC CAPABILITY APPROVAL (or its EXTENSION):

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CAPABILITY DOMAIN: Technology Specification for a Mixed Signal ASIC Based on Rad-Hard XH018 IP Library

Appl. No. 387

DLR Date: 26.01.2024 **Executive Member:** 1 Capability domain submitted for approval Capability Domain Description Test Structures Component Proposed for Capability Abstract Number Based Qualification on Technology CMOS, mixed signal Attached as Appendix: HARD Library: **ESCC Detail** Scope of the capability domain is the XH018 Process Spec 9202/084. ASIC, based on a supply chain for a RF/Mixed-Signal 7000/SPAC/IMST_RD_020, Rad-Hard XHO18 IP ASIC, based on an IP library, Version 1.3 from XFAB issue 2 library specially designed against radiation effects. This library is called HARD Type Number: Library, derived from Hard Against RHXH10002A Radiation by Design Library 4 2 3 ESCC Specifications used for Component Manufacturer Location of manufacturing plant(s) Capability Approval IMST GmbH Carl-Friedrich-Gauss-Str. 2-4, Carl-Friedrich-Gauss-Str. 2-4, Generic: ESCC 2439000, Issue 2 47475 Kamp-Lintfort, Germany 47475 Kamp-Lintfort, Germany ESCC 9000, Issue 11 Details: ESCC 9202/084, Issue 1 5 6 PID used for manufacturing Approval Testing Lot Report reference: Reference No.: 7700/6140424/IMST_RD 000 Qualification Precap Report: Precap Report SPACII IMST-PCI-DLR-01-2021, rev. 1 Issue: 3.0 Date: 17/12/2020 Date: 2020/12/10 Qualification Test Report: 7000/6140424/IMST_TR_100, Issue: 1.1 Date: 2022/07/22 8 7 Verified by: B. Gökgöz,DLR Current PID PID Changes since start of Capability Approval Name of Executive Representative Ref. No.: 7700/6140424/IMST_RD_000 None Issue: 3.3 X Minor* * provide details in Box 12 Date: 2024/01/24 Major* 9 Current Manufacturing Facilities and Quality System audited by: IMST-AUD-SPAC-2022 19./20.07.2022 B. Gökgöz, DLR, D. Lacombe, Report Reference Number Date Name of Executive Representative Corrective Actions Closed Out: Yes X No □ N/A Satisfactory: Yes X No □ 10 Quality and Reliability Data No 🗆 Failure Analysis, DPA, NCCS: Yes X Yes X No 🗆 Evaluation testing performed (supply data) Report Ref. No.: Evaluation Test report: IMST_TR_001, rev. 2.1 Ref. Nos. and purpose: date: 27.08.2018 CA & DPA: CA (Evaluation) 08C16_A97 DPA (Evaluation, new glue) 08D18_602 CA (Qualification) 08C20_396 extended DPA (Qualification) QA0004865 NCCS:

> NC1DPCX801, date 20/12/2018 NC1DIMS901, date 07/05/2019 NC2DIMS102, date 11/10/2021



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The undersigned hereby certifies on behalf of the ESCC Executive, that the above information is correct; that the appropriate documentation has been evaluated; that full compliance to all ESCC requirements is evidenced except as stated in box 13; that the reports and data are available at the ESCC Executive and therefore applies for ESCC Capability Approval status to be given to the capability domain defined herein.

Date:

Burak Goekgoez

Digital signiert von Burak Goekgoez
DN; C=DE, S=Nordrhein-Westfalen, L=Koeln, O=Deutsches Zentrum
fuer Lutt- und Raumfahrt e V. (DLR), SN=Goekgoez, G=Burak, CN=

Burak Goekgoez

Grudich bin der Verfasser dieses Dokuments
Ort: Bonn
Datum: 2024.02.02 15-23:14-01100'
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(Signature of the Executive Coordinator)

Continuation of Boxes above:

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Continuation of Box 7:

Documentation Change Notice

Date	Version	Section	Description of changes		
2021-02-16	3.1	Cover sheet	QSA Executive changed to ESCC Executive		
2021-02-16	3.1	Figure 4-1,Table 3-4, Table 4-17, Table 4-19	Service provider for first screening steps up to PIND has been allocated to FSL		
2022-08-02	3.2	Chap. 1.1: Reference List	Reference List Update		
2022-07-29	3.2	Chap. 4.1: Supplier Audit Programme	Introduction of Supplier Audit Programme		
2022-07-29	3.2	Chap. 5.1: Change Management	Reorganisation of chapter and strengthening role of ESCC-Executive		
2022-07-29	3.2	Chap. 6 Test Equipment	Introducing calibration on demand for testing equipment		
2022-07-29	3.2	Chap. 4.4.2: Figures 4-4, 4-5 updated, 4-6 new figure	Reflect recent changes to manufacturing facilities (inside IMST); R114 (Baseband laboratory) added (burn-in and electrical testing)		
2022-07-29	3.2	Chap. 4.4.5, Chap. 4.6	No repair and rework on flight/qualified ESCC items Word "draft" (for package) erased		
2022-08-02	3.2	Fig. 3-2 Order Flow Chart	Applicability of Standards, Check for most received changes;		
2022-09-20	3.2	Chap. 4.4.5 PASS/FAIL criteria	Addition of "assembly procedures", addressing die attach issues (change of test method from MIL-STD 883 TM2010 to TM2017 for preforms (exception)		
2022-10-14	3.2	Chap. 5.1 Change Management	Detailed definition of ESCC Chief Inspector and ESCC Executive role;		
2023-12-08	3.3	Chap. 8	LVDS speed information changed		
2023-12-20	3.3	Chap. 9.4	ESCC 2049000 has been added as attachment		
2023-12-20	3.3	Chap.1	Note on changed wire bonding rules after qualification design given		
2024-01-24	3.3	Chap. 1.1	Reference list updated		
2024-01-24	3.3	Chap. 4.3.1	Note added on compliance check / decision at FDR		



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	ASIC Based on Ra	ASIC Based on Rad-Hard XH018 IP Library ASIC Based on Rad-Hard XH018 IP Library					
=	Executive Member:	DLR	Date: 26	01/2024			
Non compliance to	ESCC requirements:				13		
No.:	Specification	P	aragraph	Non compliance			
Additional tasks re noncompliance:	equired to achieve full compliance	e for ESCC Capabilit	ty Approval or rationa	lle for acceptability of	14		
Executive Manag Application Approx Action/Remarks:					15		
IMST agrees to	send 3 samples coming from	the first customer	lot to ESTEC lab fo	or DPA.			

Date:

B.Schade: Head of the Product Assurance and Safety Department



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NOTES ON THE COMPLETION OF THE APPLICATION FORM FOR ESCC CAPABILITY APPROVAL [or its EXTENSION, see BOX 12 below]

GENERAL Whenever possible, all entries should be typed and in any case be suitable for legible reproduction by normal means

ENTRIES

shall indicate: - the title of the capability domain or the technology as given in the Capability Abstract - the Form heading

Executive Member; - the entering date; - the serial number and the suffix of the form.

Box 1 shall provide under capability domain description the full name or a description statement of the capability domain - the number of the Capability Abstract document - the basic technology used for capability approval - the test structures specification numbers or identification numbers - the components which

successfully passed component approval test and are proposed for qualification within the domain.

N.B. The capability abstract shall be attached as an Appendix.

Box 2 and 3 Manufacturer's name and location of the plant(s) where the capability domain is situated.

The ESCC Generic and Detail specifications (including issue number and date) used during Capability Box 4

Approval.

Box 5 Reference to test report(s) submitted in support of the application for capability approval and components

proposed for qualification.

Enter details to identify the PID that was applicable at the time of manufacturing of samples for capability Box 6

approval testing.

If the PID has been changed during or after capability approval testing, adequate details shall be provided Box 7

together with the reasons for change. Major changes shall be clearly identified.

The box serves to identify the current PID and the Executive Representative that has verified it together Box 8

with the date of this verification.

Box 9 The box can be completed only after a physical visit to the plant to confirm that the practices, procedures,

material, etc. used in manufacturing the components are as described in the PID. This audit shall be carried out in accordance with the requirements of ESCC Basic Specification No. 20200 and the results shall be

formally recorded. The report number shall be referenced.

Box 10 Details entered shall be sufficient to evidenced that an evaluation programme according to ESCC Basic

Specification No. 24300 has been performed and that the results thereof are summarised in the audit and test reports. If the evaluation programme has not been carried out according to established ESCC Specifications, the applicant Executive Member shall provide alternative data and declare the assessed degree of satisfactory compliance with the ESCC requirements. Reference shall be made to the reports on Destructive Physical Analysis (DPA), Failure Analysis reports as well as any Non Conformance (NCCS)

issued during the Evaluation and/or capability approval testing.

Box 11 Enter the name of the Executive Member (i.e., CNES, DLR, ESTEC, etc.) and the signature and date of the

responsible Executive Coordinator.

Box 12 To be used when there is a need to expand any of the boxes from 1 through 10. Identify the Box affected

and reference Box 12 in the relevant Box. Box 12 can be broken into 12a, 12b, etc. if several boxes have to

be expanded.

In the case of Application for the Extension of Capability Approval, the Box 12 may be used to provide a summary of lots of component types (types, date codes, quantity) manufactured and tested within the

capability domain. Refer to ESCC 24300, paragraph 9.4.3 for complete requirements.

Box 13 State noncompliance with reference to specification(s) and paragraph(s). To simplify reference in Box 14

each nonconformance shall be sequentially numbered. If relevant state 'None'.

Any additional action deemed necessary by the Executive Member to bring the submitted data to a Box 14

standard likely to be accepted by the ESCC Executive should be listed herein or the reason(s) to accept the

noncompliance.

All Executive Manager recommendations on the application itself, special conditions or restrictions, Box 15

modifications of the ESCC QPL entry, letters to the manufacturer, etc. shall be entered clearly in Box 15,

signed by the representative for ESA, and dated.