

		APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL				Page 1 Appl. No. 372B
Component Title: Integrated Circuits, Silicon, Monolithic, Radiation-Hardened 32-bit ARM Cortex-M7 Microcontroller (SAMRH71)		Executive Member: CNES				Date: 18/07/2025
Components (including series and families) submitted for Extension of Qualification Approval:						1
ESCC COMPONENT NO.	VARIANTS	RANGE OF COMPONENTS	BASED ON	TEST VEHICLE / S	COMPONENT SIMILAR	
9512/006	01	Integrated Circuits, Silicon Monolithic, Radiation-Hardened 32-bit ARM Cortex-M7 Microcontroller	SAMRH71 - ATMx150RHA technology	SAMRH71 CQFP-256	NA	
Component Manufacturer MICROCHIP TECHNOLOGY NANTES		Location of Manufacturing Plant(s) LA CHANTRERIE – ROUTE DE GACHET BP70602 44306 NANTES CEDEX		Date of original qualification approval: Date: 28/04/2023 Certificate Ref No. 372A		
ESCC Specifications used for Maintenance of qualification testing: Generic: 9000 Issue: 11 Detail(s): 9512/006 Issue: 4		Deviations to LVT testing and Detail Specification used: No ☒ Yes ☐ (supply details in Box 15) Deviation from current Specifications: No ☒ Yes ☐ (Supply details)		Qualification Extension Report reference and date: "SAMRH71 ESCC QPL - qualification maintenance request 2025-06 rev0.pptx" and associated reports		
Summary of procurement or equivalent test results during current validity period in support of this application (those to ESCC listed first)						8
Project Name	Testing Level	LAT	Date code	Quantity Delivered		
See SAMRH71 ESCC QPL - qualification maintenance request 2025-06 rev0.pptx				20		
PID changes since start of qualification None ☐ Minor* ☒ Major* ☐ *Provide details in box:		Current PID Verified by: CNES Ref No: PID0040 Rev B 02/07/2025		Name of Executive Representative (Date)		
19		10				
Current Manufacturing facilities surveyed by: ESA and CNES on 16/10/2024 (Name of Executive Representative) (Date)						11
Satisfactory: Yes ☒ No ☐ Explain						
Report Reference: DTN QE EC-2024.0014739 - CR-ESCC QML survey MCHP-16102024.pdf						

	APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL Component title: Integrated Circuits, Silicon, Monolithic, Radiation-Hardened 32-bit ARM Cortex-M7 Microcontroller (SAMRH71) Executive Member: CNES Date: 18/07/2025	Page 2 Appl. No. 372B																															
Failure Analysis, DPA, NCCS available: Yes ☐ No ☒ (Supply data)		12																															
Ref. No's and purposes:		13																															
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 evidence (except as stated in box 15;) - that the reports and data are available at the ESCC Executive and therefore applies on behalf of CNES as the responsible Executive Member for ESCC qualification status to be extended to the component(s) listed herein. Date: 18/07/2025 Fontaine Lya Signature numérique de Fontaine Lya Date : 2025.07.18 16:02:29 +0200 L. FONTAINE (Signature of the Executive Coordinator)		14																															
Continuation of Boxes above:																																	
Box 1: SAMRH71 is packaged in a Flat-substrate CQFP256. Its packaging/assembly reliability is monitored through the "Flat-substrate CQFP package family" Flat-substrate CQFP Wires: ultrasonic AlSi 18-25-32µm Die attach: JM7000 Al203 body Seam-welded lid flat leads min lead pitch: 0.48 mm min lead width: 0.18 mm 26 weeks <table><tr><th colspan="5">Flat-substrate CQFP package family</th></tr><tr><th>DateCode</th><th>Package</th><th>product</th><th>Lot</th><th>Comment</th></tr><tr><td>DC2322 to DC2348</td><td>CQFP256</td><td>SAMRH71</td><td>A5XHZA2CR9 A5XHZA2CRB A5XHW2A2CRA</td><td rowspan="5">MIL-PRF-38535 (6-month period)</td></tr><tr><td>DC2340 to DC2414</td><td>CQFP064</td><td>AtmegaS128</td><td>A84PMA262N</td></tr><tr><td>DC2419 to DC2445</td><td>CQFP144</td><td>SAM3X8ERT</td><td>QQFGSGRANL</td></tr><tr><td>DC2425 to DC2451</td><td>CQFP256</td><td>SAMRH71</td><td>A5XHZA2AKX</td></tr><tr><td>DC2503 to DC2529</td><td>CQFP064</td><td>AtmegaS128</td><td>A84PMA2AN4</td></tr></table>			Flat-substrate CQFP package family					DateCode	Package	product	Lot	Comment	DC2322 to DC2348	CQFP256	SAMRH71	A5XHZA2CR9 A5XHZA2CRB A5XHW2A2CRA	MIL-PRF-38535 (6-month period)	DC2340 to DC2414	CQFP064	AtmegaS128	A84PMA262N	DC2419 to DC2445	CQFP144	SAM3X8ERT	QQFGSGRANL	DC2425 to DC2451	CQFP256	SAMRH71	A5XHZA2AKX	DC2503 to DC2529	CQFP064	AtmegaS128	A84PMA2AN4
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DC2503 to DC2529	CQFP064	AtmegaS128	A84PMA2AN4																														
Box 7: SAMRH71 ESCC QPL - qualification maintenance request 2025-06 rev0 SAMRH71 PROCESS IDENTIFICATION DOCUMENT - ecn26617-pid0040																																	



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Executive Member: CNES

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Non compliance to ESCC requirements:

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No.:	Specification	Paragraph	Non compliance

Additional tasks required to achieve full compliance for ESCC qualification or rationale for acceptability of noncompliance:

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Executive Manager Disposition

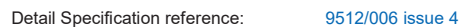
17

Application Approval: Yes ☒ No ☐

Action / Remarks:

Date: 30 September 2025


A. Zadeh: Head of the Avionics and EEE Division



CQFP flat-substrate package family - ESCC periodicity of 2 years:

Data from 2 lots presented over this 2 years period.

ADG Microchip periodicity of 26 weeks (environmental/mechanical sub-group) and each assembly lot (assembly capability sub-group).

Subgroup	Test	Tick when done	Conditions	Date Code Diffusion Lot	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Environmental/Mechanical Subgroup	Mechanical Shock	☒	MIL-STD-883, Test Method 2002B	DC2322 A5XHZA2CR9 A5XHZA2CRB A5XHWA2CRA (CQFP-256)	15	0	
	Vibration	☒	MIL-STD-883, Test Method 200A		15	0	
	Constant Acceleration	☒	MIL-STD-883, Test Method 2001D		15	0	
	Seal (Fine and Gross Leak)	☒	MIL-STD-883, Test Method 1014 A&C		15	0	
	Intermediate and End-Point Electrical Measurements	☒	Intermediate and End-Point Electrical Measurements in the Device Specification		15	0	
	External Visual Inspection	☒	ESCC Basic Specification No. 2059000	DC2503 A84PMA2AN4 (CQFP-64)	15	0	MIL-STD-883, Test Method 2009
	Thermal Shock	☒	MIL-STD-883. Test Method 1011C		15	0	
	Temperature Cycling	☒	MIL-STD-883 Test Method 1010C		15	0	
	Moisture Resistance	☒	MIL-STD-883, Test Method 1004		15	0	
	Seal (Fine and Gross Leak)	☒	MIL-STD-883, Test Method 1014 A&C		15	0	
	Intermediate and End-Point Electrical Measurements	☒	Intermediate and End-Point Electrical Measurements in the Device Specification	Coverage → 2703	15	0	
	External Visual Inspection	☒	ESCC Basic Specification No. 2059000		15	0	MIL-STD-883, Test Method 2009

Subgroup	Test	Tick when done	Conditions	Date Code Diffusion Lot	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Assembly Capability Subgroup	Terminal Strength (**)	☒	MIL-STD-883, Test Method 2004	DC2322 A5XHZA2CR9 A5XHZA2CRB A5XHWA2CRA (CQFP-256)	3	0	
	Internal Visual Inspection (*)	☒	ESCC Basic Specification No. 2049000		4	0	MIL-STD-883 Test Method 2010A
	Bond Strength (*)	☒	MIL-STD-883 Test Method 2011		4	0	
	Substrate Attach Strength (*)	☒	MIL-STD-883 Test Method 2027	DC2503 A84PMA2AN4 (CQFP-64)	3	0	(*) Done on each assembly lot (**) Subgroup D2
	Permanence of Marking (*)	☒	MIL-STD-883 Test Method 2015		3	0	
	Solderability (*)	☒	MIL-STD-883 Test Method 2003	Coverage → 2703	3	0	

Silicon reliability test - ESCC periodicity of 1 year:

As documented in QCI-39010-002, each new wafer lot is submitted to a silicon reliability test, no 1-year periodical qualification applies.
DM59Q.1 wafer lot has been used for the manufacturing of our ESCC QPL SAMRH71:

Subgroup	Test	Tick when done	Conditions	Date Code Diffusion Lot	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Endurance Subgroup	Operating Life	☒	MIL-STD-883, Test Method 1005	2000h @125°C	15	0	
	Intermediate and End-Point Electrical Measurements	☒	Intermediate and End-Point Electrical Measurements in the Device Specification	SAMRH71	15	0	
	Seal (Fine and Gross Leak)	☒	MIL-STD-883, Test Method 1014 A&C	DM59Q.1 23Q1	15	0	
	External Visual Inspection	☒	ESCC Basic Specification No. 2059000	A5XHWA265 DC2322	15	0	MIL-STD-883, Test Method 2009

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372B**NOTES ON THE COMPLETION OF THE APPLICATION FORM FOR ESCC QUALIFICATION EXTENSION APPROVAL****ENTRIES**

- Form heading** shall indicate: - the title of the component as given in its detail specification or the name of the series, family; - the Executive Member; - the entering date; - the certificate number and its sequential suffix.
- Box 1** shall provide details given in the table; in particular there shall be listed: - the variants or range of variants; - the range of components (the ESCC code is recommended to indicate the values or values range, the tolerance, the voltage, etc); the designation given in the detail specification as 'base on'; - under Test Vehicle enter either an ESCC code or the specific characteristic capable of identifying the component tested (e.g., voltage of coil for a relay); - under component similar enter a cross if relevant.
- Box 2; 3 and 4** As per QPL entry; otherwise, an explanation of the changes must be supplied.
- Box 5** Will show the ESCC Generic and Detail specifications, including issue number and revision letter, current at the time the tests reported were performed. If the specifications are different from those current on the date of the application, see Box 6.
- Box 6** Will show the deviations from the Generic and Detail Specifications listed in Box 5, in particular deviations from testing. In case of deviations this must be listed in Box 15. In case the referenced specification in Box 5 have currently a different issue and/or revision indicate also whether the test data deviates or not from such current documents.
- Box 7** Must reference the report(s) supplied in support of the application.
- Box 8** Should provide the details of procurement to the full ESCC System, documentation of all of which should already have been delivered to the ESCC Executive under the terms of the relevant Generic Specification. An appropriate table has been drawn in this box.
- Box 9** If the PID evolved after the Original Qualification or after the last Extension of Qualification, adequate details of such evolution shall be provided together with the reasons for the changes. Major changes shall be clearly marked.
- Box 10** Identify the current PID issue status, date and actual date of verification. The date of verification of the current PID should be arranged as close as possible to the required date of extension.
- Box 11** This box can be completed only after a physical visit to the plant to confirm that no unexplained changes occurred and that the practices, procedures, material, etc. used in manufacturing the components are as described in the PID. This survey shall be carried out in accordance with the requirements of ESCC Basic Specification No. 20200 and its findings shall be recorded.
- Box 12** Provide details of, or reference to, any Destructive Physical Analysis (DPA) and Failure Analysis reports as well as any Nonconformance(s) (NCCS) occurred during the qualification validity period, stating if established corrective action have produced satisfactory results.
- Box 13** Enter only the name of the Executive Member (i.e., CNES, DLR, ESTEC, etc.) and the signature of the responsible Executive Coordinator.
- Box 14** To be used when there is a need to expand any of the boxes from 1 through 12. Identify box affected and reference the Box 14 in the relevant Box. Box 14 can be broken into 14a, 14b, etc. if several boxes have to be expanded.
- Box 15** Fill in Table as requested.
- Box 16** Any additional action deemed necessary by the Executive Member to bring the submitted data to a standard likely to be accepted by the ESCC Executive should be listed herein or the reason(s) to accept the noncompliance.
- Box 17** All Executive Manager recommendations on the application itself, special conditions or restrictions, modifications of the QPL or QML entry, letters to the manufacturer, etc. shall be entered clearly in Box 19, signed by the representative for ESA, and dated.
- Box 18** Fill in Table as requested.
- Box 19** Confidential Details of PID changes including those of a confidential nature, shall be provided.
- Box 20** State noncompliance with reference to specification(s) and paragraph(s). To simplify reference in Box 16 each nonconformance shall be sequentially numbered. If relevant state 'None'.
- Box 21** Any additional action deemed necessary by the Executive Member to bring the submitted data to a standard likely to be accepted by the ESCC Executive should be listed herein or the reason(s) to accept the noncompliance.
- Box 22** Additional Comments.