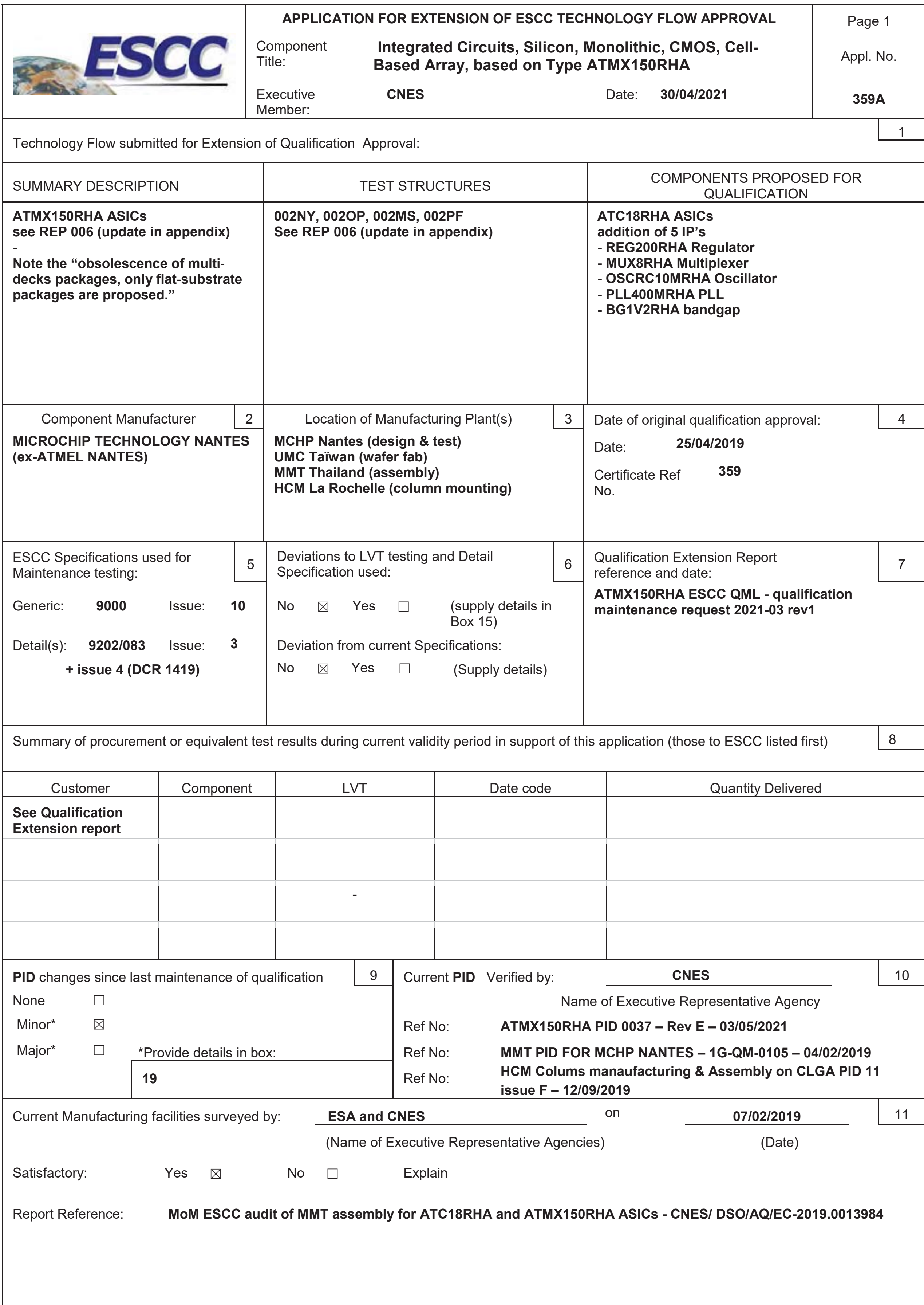

ESCC	APPLICATION FOR EXTENSION OF ESCC TECHNOLOGY FLOW APPROVAL	Page 1
	Component Title: **Integrated Circuits, Silicon, Monolithic, CMOS, Cell-Based Array, based on Type ATMX150RHA**	Appl. No.
	Executive Member: **CNES** Date: **30/04/2021**	**359A**

Technology Flow submitted for Extension of Qualification Approval: [1]

SUMMARY DESCRIPTION	TEST STRUCTURES	COMPONENTS PROPOSED FOR QUALIFICATION
ATMX150RHA ASICs **see REP 006 (update in appendix)** **-** **Note the "obsolescence of multi-decks packages, only flat-substrate packages are proposed."**	**002NY, 002OP, 002MS, 002PF** **See REP 006 (update in appendix)**	**ATC18RHA ASICs** **addition of 5 IP's** **- REG200RHA Regulator** **- MUX8RHA Multiplexer** **- OSCRC10MRHA Oscillator** **- PLL400MRHA PLL** **- BG1V2RHA bandgap**

Component Manufacturer [2]	Location of Manufacturing Plant(s) [3]	Date of original qualification approval: [4]
MICROCHIP TECHNOLOGY NANTES (ex-ATMEL NANTES)	**MCHP Nantes (design & test)** **UMC Taïwan (wafer fab)** **MMT Thailand (assembly)** **HCM La Rochelle (column mounting)**	Date: **25/04/2019** Certificate Ref No. **359**

ESCC Specifications used for Maintenance testing: [5]	Deviations to LVT testing and Detail Specification used: [6]	Qualification Extension Report reference and date: [7]
Generic: **9000** Issue: **10** Detail(s): **9202/083** Issue: **3** **+ issue 4 (DCR 1419)**	No ☒ Yes ☐ (supply details in Box 15) Deviation from current Specifications: No ☒ Yes ☐ (Supply details)	**ATMX150RHA ESCC QML - qualification maintenance request 2021-03 rev1**

Summary of procurement or equivalent test results during current validity period in support of this application (those to ESCC listed first) [8]

Customer	Component	LVT	Date code	Quantity Delivered
See Qualification Extension report				
		-		

PID changes since last maintenance of qualification [9]

None ☐
Minor* ☒
Major* ☐ *Provide details in box: **19**

Current **PID** Verified by: **CNES** [10]
Name of Executive Representative Agency

Ref No: **ATMX150RHA PID 0037 – Rev E – 03/05/2021**
Ref No: **MMT PID FOR MCHP NANTES – 1G-QM-0105 – 04/02/2019**
Ref No: **HCM Colums manaufacturing & Assembly on CLGA PID 11 issue F – 12/09/2019**

Current Manufacturing facilities surveyed by: **ESA and CNES** on **07/02/2019** [11]
(Name of Executive Representative Agencies) (Date)

Satisfactory: Yes ☒ No ☐ Explain

Report Reference: **MoM ESCC audit of MMT assembly for ATC18RHA and ATMX150RHA ASICs - CNES/ DSO/AQ/EC-2019.0013984**

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Failure Analysis, DPA, NCCS available: Yes ☐ No ☒ (Supply data)

Ref. No's and purposes:

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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 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: **04/05/2021**

JP. BUSSENOT

(Signature of the Executive Coordinator)

Continuation of Boxes above:

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Box 7:

ESCC QML qualification of UMC 8C wafer fab with MMT assembly and 5 pre-qualified IP's based on: ATMX150RHA ESCC QML - qualification maintenance request 2021-03 rev1 and associated reports:

- **ATMX150RHA Qualification Test Report - QTR 2018-IC-384 rev1**
- **ATMX150RHA Process Identification Document - PID0037 revE**
- **MMT - Assembly of multi-decks & Flat-substrate packages - Qualification Test Report - QTR 2017-EC-212 rev2**
- **QP- IP blocks for ATMX150RHA Rev.B - September 2020**
- **Technology flow summary rev.C-2 - 24/03/2021**
- **REG200RHA Linear Voltage Regulator Radiation Test Report Single Event Effects evaluation & TID Qualification - Rev 1.0 - April 2020**
- **MUX8RHA 8 Channels Analog Multiplexer Radiation Test Report Single Event Effects Evaluation & TID Qualification - Rev 1.0 - July 2020**
- **OSCRC10MRHA - Programmable RC Oscillator Radiation Test Report Single Event Effects Evaluation & TID Qualification - Rev 1.0 - May 2021**
- **PLL Radiation Test Report: Microchip ATMX150RHA Rad-Hard CMOS 150nm cell-based ASIC family Radiation Characterization Test Report Total Dose (TID) and Single Event Effects (SEE) - Rev 5.0 - April 2020**
- **BG1V2RHA Bandgap Voltage Reference Radiation Test Report Single Event Effects evaluation & Total Ionizing Dose Qualification - Rev 1.0 - June 2020**

APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL

Component title: **Integrated Circuits, Silicon, Monolithic, CMOS, Cell-Based Array, based on Type ATMX150RHA**

Appl. No. **359A**

Executive Member: **CNES** Date: **30/04/2021**

Non compliance to ESCC requirements: 15

No.:	Specification	Paragraph	Non compliance
1	**9000**	**Chart F4**	**Chart F4 testing replaced with the implementation of periodic testing as described in PID**

Additional tasks required to achieve full compliance for ESCC qualification or rationale for acceptability of noncompliance: 16

None

Executive Manager Disposition 17

Application Approval: Yes ☒ No ☐

Action / Remarks:

Date:

Digitally signed by Britta Schade
Date: 2021.05.31 08:22:03 +02'00'

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

ANNEX 1: LIST OF TESTS DONE TO SUPPORT EXTENSION OF QUALIFICATION

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Tests conducted in compliance with:

- ESCC 9000 generic specification; Chart F4 (for ESCC/QPL parts);
- or PID-TFD **ATMX150RHA PID 0037 – Rev E** (for ESCC/QML parts)

Tests vehicle identification/description:

002OP CQFP-352	**Standard Evaluation Circuit (SEC) 002OP has been designed in compliance with the requirements of the MIL-PRF38535 §H.3.4.3. and contains: - Transistors to cover a domain up to 22 Mgates (equiv. NAND2) - Thick top metal layer to avoid voltage drop issues - Set of compiled memory blocks with and without EDACs - Shift registers chains - PLL PLL300MRHA 002OP shall be embarked on all Multi-Project-Wafer (MPW) without or with thick Metal option and shall monitor this technology option. • Die Size 169mm² • Package R-CQ352_T • Die Attach JM7000 • Wires (nature, diameter) AlSi, 25µm**
002MS CQFP-352	**Standard Evaluation Circuit (SEC) Same than 002OP but NO Thick Metal Layer 002MS shall be embarked on all Multi-Project-Wafer (MPW) without or with thick Metal option and shall monitor this technology option. • Die Size 169mm² • Package R-CQ352_T • Die Attach JM7000 • Wires (nature, diameter) AlSi, 25µm**
002NY CQFP-352	**Buffers Test Vehicle 002NY is a 5 metal layers with thick metal option test vehicle specifically designed for the test of the I/O buffers library. It contains all types of I/O buffers proposed in the ATMX150RHA ASIC platform. It shall be used for the electrical latch-up and ESD tests. It contains: - Standard IO33 buffers - Specific IO33 buffers (LVDS, PCI) - PLL PLL300MRHA for performance evaluation - Set of ring oscillators made of different library cells - Set of interconnect lines • Die Size 71.3mm² • Package R_CQ352_G • Die Attach JM7000 • Wires (nature, diameter) AlSi, 32µm**
002PF CQFP-256	**Pre-qualified IP's Test Vehicule 002PF is a test vehicle specifically designed for the test of the specific blocks. It contains: - a regulator 200mA REG200RHA rev.2.0.0_BETA - an 8-channels multiplexer MUX8RHA rev1.1.2_BETA - a 1.25V Band-Gap voltage reference BG1V2RHA rev1.0.0_BETA - a RC-oscillator programmable 4/8/10/12 MHz OSCRC10MRHA rev. 1.1.2_BETA - a programmable PLL 40 to 450 MHz PLL400MRHA rev. 2.0.0_BETA • Die Size 77.3mm² • Package R_CQ256_Z • Die Attach JM7000 • Wires (nature, diameter) AlSi, 25µm Configuration for qualification: • Test vehicle revision: Rev.B • Electrical test program: 002PFB_3h • Screening: PID-03, -SV type In addition to the digital ATMX150RHA ASIC offer qualification results described in the QP-ATMX150RHA document, dedicated qualification tests are performed for each specific block. Each block from the test vehicle 002PF, assembled and screened according to a -SV flow, is submitted to an operating life test, a total dose ionization test and a SEE test.**

Detail Specification reference: **9202/083**

CQFP 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	DC1942 A84PKA2CKT = ATMEGAS128-ZC-SV MQFP64	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		15	0	MIL-STD-883, Test Method 2009
	Thermal Shock	☒	MIL-STD-883. Test Method 1011C	DC2031 DGR5SA2842 = AT150R324FSSDFB-SV CQFP256 Coverage → 2231	15	0	
	Temperature Cyling	☒	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		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	Permanence of Marking (*)	☒	ESCC Basic Specification No. 24800	DC1942 A84PKA2CKT = ATMEGAS128-ZC-SV MQFP64 DC2031 DGR5SA2842 = AT150R324FSSDFB-SV CQFP256 Coverage → 2231	3	0	
	Terminal Strength (**)	☒	MIL-STD-883, Test Method 2004		3	0	
	Internal Visual Inspection (*)	☒	ESCC Basic Specification No. 2049000		2	0	MIL-STD-883 Test Method 2010
	Bond Strength (*)	☒	MIL-STD-883 Test Method 2011		4	0	(*) Done on each assembly lot (**) Subgroup D2
	Substrate Attach Strength (*)	☒	MIL-STD-883 Test Method 2027		4	0	
	Solderability (*)	☒	MIL-STD-883 Test Method 2003		3	0	

CCGA package family - ESCC periodicity of 2 years: Only 1 lot manufactured during the 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
Environmental/Mechanical Subgroup	Mechanical Shock	☒	MIL-STD-883, Test Method 2002B	DC1848 P01718 =DAISY_R-CLGA896 CCGA896 Coverage → 2048	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		15	0	MIL-STD-883, Test Method 2009
	Thermal Shock	☒	MIL-STD-883. Test Method 1011C		15	0	
	Temperature Cyling	☒	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		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	Permanence of Marking (*)	☒	ESCC Basic Specification No. 24800	DC1848 P01718 =DAISY_R-CLGA896 CCGA896 Coverage → 2048	3	0	
	Column Pull TEST (*)	☒	MIL-STD-883, Test Method 2038		2	0	
	Internal Visual Inspection (*)	☒	ESCC Basic Specification No. 2049000		NA No die	0	MIL-STD-883 Test Method 2010
	Bond Strength (*)	☒	MIL-STD-883 Test Method 2011		NA No die	0	(*) Done on each assembly lot
	Substrate Attach Strength (*)	☒	MIL-STD-883 Test Method 2027		NA No die	0	
	Solderability (*)	☒	MIL-STD-883 Test Method 2003		3	0	

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	002OP-A-14 DG3AY.1 A68ADA25SP DC1924 CQFP-352	15	0	
	Seal (Fine and Gross Leak)	☒	MIL-STD-883, Test Method 1014 A&C	002OP-A-15 DFQQ5.1 DFQQ5A283J DC2008 CQFP-352 Coverage → Q1/2021	15	0	
	Bond Strength after Life-Test	☒	MIL-STD-883, Test Method 2011	002OP-A-14 DG3AY.1 A68ADA25SP DC1924 CQFP-352	4	0	Sampling: 4 parts - 25% of wires on each parts, 428 wires in total
	Bond Strength after Life-Test	☒	MIL-STD-883, Test Method 2011	002OP-A-15 DFQQ5.1 DFQQ5A283J DC2008 CQFP-352	4	0	Sampling: 4 parts - 25% of wires on each parts, 428 wires in total
	Operating Life	☒	MIL-STD-883, Test Method 1005	2000h @150°C	43	0	REG200RHA Regulator life test results:
	Intermediate and End-Point Electrical Measurements	☒	Intermediate and End-Point Electrical Measurements in the Device Specification	002PF DCG1J.1 CQFP-256	43	0	2 parts failed for EOS issue. The analysis demonstrated that the stress induced by the daily monitoring (shunt on REGVOUT de plugged/plugged) damaged the regulator.
	Operating Life	☒	MIL-STD-883, Test Method 1005	2000h @150°C	45	0	MUX8RHA Multiplexer life test results
	Intermediate and End-Point Electrical Measurements	☒	Intermediate and End-Point Electrical Measurements in the Device Specification	002PF DC0G0.1 CQFP-256	45	0	
	Operating Life	☒	MIL-STD-883, Test Method 1005	2000h @150°C	45	0	OSCRC10MRHA Oscillator life test results
	Intermediate and End-Point Electrical Measurements	☒	Intermediate and End-Point Electrical Measurements in the Device Specification	002PF DCG1J.1 CQFP-256	45	0	
	Operating Life	☒	MIL-STD-883, Test Method 1005	2000h @150°C	45	0	PLL400MRHA PLL life test results
	Intermediate and End-Point Electrical Measurements	☒	Intermediate and End-Point Electrical Measurements in the Device Specification	002PF DCG1J.1 CQFP-256	45	0	

	Operating Life	☒	MIL-STD-883, Test Method 1005	2000h @150°C	45	0	BG1V2RHA bandgap life test results
	Intermediate and End-Point Electrical Measurements	☒	Intermediate and End-Point Electrical Measurements in the Device Specification	002PF DCG1J.1 CQFP-256	45	0	
Additional Tests	Radiation Tests	☒	TID ESA/SCC 22900 MIL-STD-883 Test Method 1019	002PF DC0G0.1 CQFP-256	22 ON + 5 OFF	0	REG200RHA Regulator TID results: TID capability is demonstrated up to 150krad(Si). The REG200RHA IP is qualified up to 100krad(Si).
	Radiation Tests	☒	SEE ESA/SCC 25100 EIA/JESD57	002PF DC0G0.1 CQFP-256	3	0	REG200RHA Regulator SEE results: SEL sensitivity was confirmed as higher than 62.5MeV.cm²/mg at a fluence of 10^7 ions/cm2 @Vccmax @125°C Static mode. SEU sensitivity characterization was achieved. Only a few events were observed on REG_OUT at 62.5MeV.cm²/mg, preventing Weibul curve as well as SER to be computed. PFD as well as POR outputs didn't exhibited any event up to 62.5MeV.cm²/mg. In any case, REG_OUT signal remained within the specification.
	Radiation Tests	☒	TID ESA/SCC 22900 MIL-STD-883 Test Method 1019	002PF DC0G0.1 CQFP-256	22 ON + 5 OFF	0	MUX8RHA Multiplexer TID results: TID capability is demonstrated up to 150krad(Si). The MUX8RHA is qualified 100krad(Si).
	Radiation Tests	☒	SEE ESA/SCC 25100 EIA/JESD57	002PF DC0G0.1 CQFP-256	3	0	MUX8RHA Multiplexer SEE results: SEL sensitivity was confirmed as higher than 65MeV.cm²/mg at a fluence of 10^7 ions/cm2 @Vccmax @125°C Static mode SEU sensitivity characterization was performed and the MUX8RHA exhibited no event up to 65MeV.cm²/mg.
	Radiation Tests	☒	TID ESA/SCC 22900 MIL-STD-883 Test Method 1019	002PF DC0G0.1 CQFP-256	22 ON + 5 OFF	0	OSCRC10MRHA Oscillator TID results: TID capability is demonstrated up to 150krad(Si). The OSCRC10MRHA is qualified 100krad(Si).
	Radiation Tests	☒	SEE ESA/SCC 25100 EIA/JESD57	002PF DC0G0.1 CQFP-256	3	0	OSCRC10MRHA Oscillator SEE results: SEL sensitivity was confirmed as higher than 60MeV.cm²/mg at a fluence of 10^7 ions/cm2 @Vccmax @125°C Static mode Refer to report for more details.
	Radiation Tests	☒	TID ESA/SCC 22900 MIL-STD-883 Test Method 1019	002PF DC0G0.1 CQFP-256	22 ON + 5 OFF	0	PLL400MRHA PLL TID results: TID capability is demonstrated up to 150krad(Si). The PLL400MRHA is qualified 100krad(Si).

	Radiation Tests	⊠	SEE ESA/SCC 25100 EIA/JESD57	002PF DC0G0.1 CQFP-256	3	0	PLL400MRHA PLL SEE results: SEL sensitivity was confirmed as higher than 78.2MeV.cm²/mg at a fluence of 10^7 ions/cm2 @Vccmax @125°C Static mode. SEE test showed a sensitivity of the PLL Lock feature with a LET threshold of 7.5MeV.cm²/mg. This weakness will be corrected in the rev. V3 of the PLL and a new SEE session is planned in 2021.
	Radiation Tests	⊠	TID ESA/SCC 22900 MIL-STD-883 Test Method 1019	002PF DC0G0.1 CQFP-256	22 ON + 5 OFF	0	BG1V2RHA bandgap TID results: TID capability is demonstrated up to 150krad(Si). The BG1V2RHA is qualified 100krad(Si).
	Radiation Tests	⊠	SEE ESA/SCC 25100 EIA/JESD57	002PF DC0G0.1 CQFP-256	3	0	BG1V2RHA bandgap SEE results: SEL sensitivity was confirmed as higher than 77.3MeV.cm²/mg at a fluence of 10^7 ions/cm2 @Vccmax @125°C Static mode. The BG1V2RHA is SEE free up to 60 MeV.cm²/mg.

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.