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		Component Title: Capacitors, Ceramic, Type II, types CNC53 to CNC56				Appl. No.
		Executive Member: CNES		Date: 10/12/2019		306D rev1

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
3001 038	01 to 04	All values	CNC5XNE	See box 14	X
	08 to 11		CNC5XPE	See box 14	
	15 to 18	50V to 500V	CNC5XPLE		
	22 to 25		CNC5XLE	See box 14	

Component Manufacturer EXXELIA Technologies	2	Location of Manufacturing Plant(s) 1, rue des Temps Modernes 77600 CHANTELOUP EN BRIE FRANCE	3	Date of original qualification approval: Date: 01/03/2011 Certificate Ref No. 306	4
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ESCC Specifications used for Maintenance of qualification testing: Generic: 3001 Issue: 1 Detail(s): 3001038 Issue: 1	5	Deviations to LVT testing and Detail Specification used: No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> (supply details in Box 15) Deviation from current Specifications: No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (Supply details)	6	Qualification Extension Report reference and date: EXXELIA test report N° 19/0667 to 19/0675, dated January 2019 (9 reports) EXXELIA test reports 19/0003 and 19/0005 dated December 2018 EXXELIA test reports 19/1277 and 19/1278 dated August 2019	7
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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
ALTER Technology EREMS				March 2017 to Dec. 2018 – 20 lots, 1 039 parts (See appendices)

PID changes since start of qualification None <input checked="" type="checkbox"/> Minor* <input type="checkbox"/> Major* <input type="checkbox"/> *Provide details in box:	9	Current PID Verified by: CNES Name of Executive Representative Agency Ref No: 644.03.390 Issue: L Date: 21/08/2019 Rev Date: 02/08/2019	10
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Current Manufacturing facilities surveyed by: **ESA & CNES** on **19/08/2019**

(Name of Executive Representative Agency)
(Date)

Satisfactory: Yes ☒ No ☐ Explain

Report Reference: CNES/DSO/AQ/CQ-2019.0013650



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Failure Analysis, DPA, NCCS available: Yes ☒ No ☐ (Supply data) 2CETE801Ref. No's and purposes: 2CETE801: Late Delivery of MoQ testing reports (See appendices)
DL1 Line Qualification: See FA attached to report 19/278

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: 13/12/2019

JP. BUSSENOT

(Signature of the Executive Coordinator)

Continuation of Boxes above:

Box 1 – Test Vehicles


	LVT 1A	LVT 1B	LVT 2A	LVT 2B	LVT 3
CNC53NE 6.8μF +/-10% 100 V	NA	NA	NA	3	NA
CNC55NE 33μF +/-10% 100 V	NA	NA	NA	3	NA
CNC53NE 10μF +/-10% 100 V	NA	NA	NA	NA	3
CNC55PE 33μF +/-10% 100 V	20	NA	NA	NA	NA
CNC56PE 10μF +/-10% 200 V	NA	3	NA	NA	NA
CNC53PE 2.2μF +/-10% 100 V	NA	NA	10	NA	NA
CNC53PE 5.6μF +/-10% 100 V	NA	NA	10	NA	NA
CNC53PE 4.7μF +/-10% 100 V	NA	NA	NA	NA	3
CNC53LE 10μF +/-10% 50 V	NA	3	NA	NA	NA

(1) Due to lack of availability at the time of testing, CNC53NE 6.8μF ±10% 100V test vehicle has been replaced with CNC53NE 8.2μF ±10% 100V vehicle

In order to validate the new DL1 line, 4 test vehicles were selected

CNC53 N E 50V 10μF 10% Lev. FM	19/1277	Low Voltage Humidity 20 pièces / 1 000 H Endurance 2 000 H / 2Un et 2,5Un / +125°C / 10 et 10 pièces
CNC53 N E 500V 1μF 10% Lev. FM	19/0003	Low Voltage Humidity not applicable (V ≥ 500V) Endurance 2 000 H / 750V et 875V / +125°C / 10 et 10 pièces
CNC56 N E 50V 56μF 10% Lev. FM	19/1278	Low Voltage Humidity 20 pièces / 1 000 H Endurance 2 000 H / 2Un et 2,5Un / +125°C / 10 et 10 pièces
CNC56 N E 500V 5,6μF 10% Lev. FM	19/0005	Low Voltage Humidity not applicable (V ≥ 500V) Endurance 2 000 H / 750V et 875V / +125°C / 10 et 10 pièces

Accelerated endurance test based on original evaluation data (2,5Un for 50V and 1,75 for 500V parts) have been performed for reference. Too short circuits have been observed on 50V / 56μF CNC56 (3 chips stacked) after 1 000H and 2 000H. Original evaluation of 50V test vehicle 68μF / 50V showed one short circuit after 500 H and testing was stopped after 1 000H. Results are therefore comparable. See FA attached as a supplement to report 19/278.

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Non compliance to ESCC requirements: 15

No.:	Specification	Paragraph	Non compliance
1	3001 & 3001/038		ESCC 3001 issues 2, 3 (implementation of periodic testing ...) and corresponding ESCC 3001/038 issues 2 to 4 not yet fully implemented by EXXELIA. Nevertheless, Chart F4 testing has been implemented for the maintenance activity (replacing Chart V requirements)

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


None – ESCC 3001 issue 1 and 3001/038 issue 1 requirements are reflected in current PID
 A revision of the PID is in progress, it should be implemented by July 2019.
 New PID edition L issued.

Executive Manager Disposition 17

Application Approval: Yes ☒ No ☐

Action / Remarks:

Date: 27.01.2020


 B. Schade, Head of ESA Product Assurance and Safety Department



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

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Tests conducted in compliance with:

- ESCC 3001 generic specification; Chart V (for ESCC/QPL parts);
- Or PID-TFD (for ESCC/QML parts)

Tests vehicle identification/description:

CNC53NE 33µF ±10% 100V DC 1714	CNC56PE 10µF ±10% 200V DC 1817
CNC53NE 8,2µF ±10% 100V DC 1837	CNC53PE 2.2µF ±10% 100V DC 1743
CNC53NE 10µF ±10% 100V DC 1805	CNC53PE 5.6µF ±10% 100V DC 1808
CNC55PE 33µF ±10% 100V DC 1837A	CNC53PE 4.7µF ±10% 100V DC 1734
	CNC53LE 10µF ±10% 50V DC 1725

Detail Specification reference: 3001/038

Chart V	Test	Tick when done	Conditions	Date Code	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Environmental / Mechanical Subgroup (Column 1)	Robustness of Terminations	<input type="checkbox"/>	IEC 68-2-21				Testing based on Chart F4
	Resistance to Soldering Heat	<input type="checkbox"/>	IEC 68-2-20				
	External Visual Inspection	<input type="checkbox"/>	ESCC 20500				
	Climatic Test Sequence	<input type="checkbox"/>	ESCC 3001, Para. 9.13				
Environmental / Mechanical Subgroup (Column 2)	Rapid Change of Temperature	<input checked="" type="checkbox"/>	IEC 68-2-14	1725 1817	3 3	0	Correspond to Chart F4 1B
	Vibration	<input checked="" type="checkbox"/>	IEC 68-2-6	1725 1817	3 3	0	
	Shock or Bump	<input checked="" type="checkbox"/>	ESCC 3001, Para. 9.12	1725 1817	3 3	0	
	External Visual Inspection	<input checked="" type="checkbox"/>	ESCC 20500	1725 1817	3 3	0	
	Climatic Test Sequence	<input type="checkbox"/>	ESCC 3001, Para. 9.13				
Endurance Subgroup	Operating Life	<input checked="" type="checkbox"/>	ESCC 3001, Para. 9.15	1743 1808	10 10	0	Correspond to Chart F4 2A
	Electrical Meas. during Endurance Testing	<input checked="" type="checkbox"/>	ESCC 3001, Para. 9.5.5	1743 1808	10 10	0	
Electrical Subgroup (Electrical Measurements)	Temperature Coefficient (Type I)	<input type="checkbox"/>	ESCC 3001, Para. 9.16				
	Temperature Characteristic (Type II)	<input checked="" type="checkbox"/>	ESCC 3001, Para. 9.17	1837 1714	3 3	0	Correspond to Chart F4 2B
Electrical Subgroup (Assembly / Capability Tests)	Solderability	<input checked="" type="checkbox"/>	IEC 68-2-20	1734 1805	3 3	0	Correspond to Chart F4 3 – Test 1
	Permanence of Marking	<input checked="" type="checkbox"/>	ESCC 24800	1734 1805	3 3	0	Correspond to Chart F4 3 – Test 3

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Chart F4	Test	Tick when done	Conditions	Date Code	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Additional Tests	Resistance to Soldering Heat	<input checked="" type="checkbox"/>	ESCC 3001 Para 8.9	1734 1805	3 3	0	Correspond to Chart F4 3 – Test 2
	Rapid Change of Temperature	<input checked="" type="checkbox"/>	ESCC 3001 Para 8.5	1837A	20	0	Correspond to Chart F4 1A
	Steady State Humidity (85/85)	<input checked="" type="checkbox"/>	ESCC 3001 Para 8.2	1837A	20	0	Correspond to Chart F4 1A 1 000H



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Executive Member: CNES

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ANNEX 1bis: LIST OF TESTS DONE TO SUPPORT QUALIFICATION of DL1 LINE

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Tests conducted in compliance with:

- ESCC 3001 generic specification; Chart V (for ESCC/QPL parts);
- Or PID-TFD (for ESCC/QML parts)

Tests vehicle identification/description:

CNC53NE 1 μ F \pm 10% 500V Lot E1807L002	CNC56NE 5.6 μ F \pm 10% 500V Lot E1806L001
CNC53NE 10 μ F \pm 10% 50V Lot E1906L001	CNC56NE 56 μ F \pm 10% 50V Lot E1905L001

Detail Specification reference: 3001/038

Chart V	Test	Tick when done	Conditions	Date Code	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Environmental / Mechanical Subgroup (Column 1)	Robustness of Terminations	<input type="checkbox"/>	IEC 68-2-21				Testing based on Chart F4
	Resistance to Soldering Heat	<input type="checkbox"/>	IEC 68-2-20				
	External Visual Inspection	<input type="checkbox"/>	ESCC 20500				
	Climatic Test Sequence	<input type="checkbox"/>	ESCC 3001, Para. 9.13				
Environmental / Mechanical Subgroup (Column 2)	Rapid Change of Temperature	<input checked="" type="checkbox"/>	IEC 68-2-14	1807 1806 1906 1905	3 3 3 3	0	Correspond to Chart F4 1B
	Vibration	<input checked="" type="checkbox"/>	IEC 68-2-6	1807 1806 1906 1905	3 3 3 3	0	
	Shock or Bump	<input checked="" type="checkbox"/>	ESCC 3001, Para. 9.12	1807 1806 1906 1905	3 3 3 3	0	
	External Visual Inspection	<input checked="" type="checkbox"/>	ESCC 20500	1807 1806 1906 1905	3 3 3 3	0	
	Climatic Test Sequence	<input type="checkbox"/>	ESCC 3001, Para. 9.13				
Endurance Subgroup	Operating Life	<input checked="" type="checkbox"/>	ESCC 3001, Para. 9.15	1807 1806 1906 1905	10 10 10 10	0	Correspond to Chart F4 2A
	Electrical Meas. during Endurance Testing	<input checked="" type="checkbox"/>	ESCC 3001, Para. 9.5.5	1807 1806 1906 1905	10 10 10 10	0	
Electrical Subgroup (Electrical Measurements)	Temperature Coefficient (Type I)	<input type="checkbox"/>	ESCC 3001, Para. 9.16				
	Temperature Characteristic (Type II)	<input checked="" type="checkbox"/>	ESCC 3001, Para. 9.17	1807 1806 1906 1905	3 3 3 3	0	Correspond to Chart F4 2B



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Chart V	Test	Tick when done	Conditions	Date Code	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Electrical Subgroup (Assembly / Capability Tests)	Solderability	<input checked="" type="checkbox"/>	IEC 68-2-20	1807 1806 1906 1905	3 3 3 3	0	Correspond to Chart F4 3 – Test 1
	Permanence of Marking	<input checked="" type="checkbox"/>	ESCC 24800	1807 1806 1906 1905	3 3 3 3	0	Correspond to Chart F4 3 – Test 3

Chart F4	Test	Tick when done	Conditions	Date Code	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Additional Tests	Resistance to Soldering Heat	<input checked="" type="checkbox"/>	ESCC 3001 Para 8.9	1807 1806 1906 1905	3 3 3 3	0	Correspond to Chart F4 3 – Test 2
	Rapid Change of Temperature	<input checked="" type="checkbox"/>	ESCC 3001 Para 8.5	1807 1806 1906 1905	20 20 20 20	0	Correspond to Chart F4 1A
	Steady State Humidity (85/85)	<input checked="" type="checkbox"/>	ESCC 3001 Para 8.2	1906 1905	20 20	0	Correspond to Chart F4 1A 1 000H (Not applicable to high voltages)
	Accelerated Endurance	<input checked="" type="checkbox"/>	ESCC 3001 Para 9.15	1807 1806 1906 1905	10 10 10 10	0 0 0 2	1.75Un – 2 000H - +125°C 1.75Un – 2 000H - +125°C 2.5Un – 2 000H - +125°C 2.5Un – 2 000H - +125°C

	<p align="center">APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL</p> <p>Component title: Capacitors, Ceramic, Type II, types CNC53 to CNC56</p> <p>Executive Member: CNES Date: 10/12/2019</p>	<p align="center">Page 9</p> <p align="center">Appl. No.</p> <p align="center">306D rev1</p>
<p align="center">NOTES ON THE COMPLETION OF THE APPLICATION FORM FOR ESCC QUALIFICATION EXTENSION APPROVAL</p>		
<p>ENTRIES</p>		
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.	