APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL

Component Title: Capacitors, Ceramic, Chip, Type I, sizes 0402 to 2220

Executive Member: CNES Date: 28/04/2022

Appl. No. 323D

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
3009/003 3009/004 3009/005	06 06 06	All values 16V to 100V	CEC2 02S CEC4 02S CEC6 02S	- 300900406-4701JE 300900506-1802JA 300900506-2742FA	See box 14 for qualified ranges.
3009/006 - 3009/022 3009/037	06 - 06 06	All values 16V to 100V	CEC7 02S - CEC12 02S CEC14 02S	CEC7 02S 56,2nF ±1% 25V 300900606-6812FX - 300903706-2200JC	
3009/040	01 to 06	All values 16V to 100V	CEC2 04S to CEC14 04S	300904004-1002GC - 300904001-1001JX	
3009/042 3009/040	06 13	All values 10V to 50V	CEC19 02S CEC19 04S		

Component Manufacturer 2

EXXELIA SAS

Location of Manufacturing Plant(s) 3

EXXELIA
1, rue des Temps Modernes
77600 CHANTELOUP EN BRIE
FRANCE

4

Date of original qualification approval:
Date: 24/10/2012
Certificate Ref No. 323

5

ESCC Specifications used for Maintenance of qualification testing:

Generic: 3009 Issue: 4

Detail(s):		
3009/004	Issue:	6
3009/005		6
3009/006		6
3009/037		3
3009/040		4

6

Deviations to LVT testing and Detail Specification used:

No ☒ Yes ☐ (supply details in Box 15)

Deviation from current Specifications:

No ☒ Yes ☐ (Supply details)

7

Qualification Extension Report reference and date:

Report 20.0867 i.B – CEC4 02S 4,7nF, 100V
Report 20.0876 i.B – CEC4 04S 10nF, 50V
Report 20.0727 i.B – CEC6 02S 18nF, 25V
Report 20.0918 i.B – CEC6 02S 27,4nF, 25V
Report 21.0396 i.B – CEC7 02S 56,2nF, 25V
Report 20.1207 i.B – CEC7 02S 68,1nF, 16V
Report 20.1222 i.B – CEC14 04S 1nF, 16V
Report 20.1147 i.B – CEC14 02S 220pF, 50V

8

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

Project Name	Testing Level	LAT	Date code	Quantity Delivered
Thales Alenia Sp. (Fr) TESAT Spacecom (G) APCON Aerospace (G) TERMA A/S (Dk) ALTER Tech (Sp.) Bharat Elec. (In.) ...	-	-	Lots delivered from March 2020 to March 2022	Total 19 500 parts (62,5% 0603, 16,7% 0805 8,8% 2220, 8% 1210)
		-		

PID changes since start of qualification 9

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

Current **PID** Verified by: JP-Bussenot,CNES 10
Name of Excutive Representative

Ref No: PID 623.03.390
Issue: Rev K Date: 02/06/2021
Rev Date: 19/05/2021

11

Current Manufacturing facilities surveyed by: D. Lacombe, ESA & JP Bussenot, CNES on 09/01/2020
(Name of Executive Representative) (Date)

Satisfactory: Yes ☒ No ☐ Explain Review of ceramic activities, new DL1 Line

Report Reference: 2020-0023019-CR-Bussenot-RT & Qualifications Céramique-Film-Exxelia-Janvier 2020, 22/01/2020

12

Failure Analysis, DPA, NCCS available: Yes ☒ No ☐ (Supply data) 1CETE202 (Open), 1CETE203 (Closed) See in appendix

Ref. No's and purposes: **1CETE202**: Lack of homogeneity of the nickel sub-layer inducing wettability problems where the thickness is too thin. **Open**, Surface treatment process to be further investigated (Due date: July 2022)
1CETE203: Wrong implementation of Burn-in conditions as defined in the PID. Nevertheless comply to ESCC requirements. **Closed** through the up-grading of EXXELIA ERP.

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: 03/05/2022

JP. BUSSENOT
(Signature of the Executive Coordinator)

14

Continuation of Boxes above:

Box 1, Range of Components :

Style	Detail Spec.	Model	Variants	Capacitance Range (pF)	Rated Volt. (V)	Tolerance (pF, ±%)
0805	**3009/003** **3009/040**	**CEC2 02S** **CEC2 04S**	**06 02**	**1 to 2 700** **1 to 2 200** **1 to 1 800** **1 to 1 200**	**16** **25** **50** **100**	**< 10pF** **0,25 – 0,5 – 1 (pF)**
1210	**3009/004** **3009/040**	**CEC4 02S** **CEC4 04S**	**06 04**	**10 to 15 000** **10 to 12 000** **10 to 12 000** **10 to 6 800**	**16** **25** **50** **100**	**≥ 10pF** **1, 2, 5, 10 (%)**
1812	**3009/005** **3009/040**	**CEC6 02S** **CEC6 04S**	**06 05**	**100 to 33 000** **100 to 27 000** **100 to 22 000** **100 to 12 000**	**16** **25** **50** **100**	
2220	**3009/006** **3009/040**	**CEC7 02S** **CEC7 04S**	**06 06**	**470 to 68 000** **470 to 56 000** **470 to 47 000** **470 to 27 000**	**16** **25** **50** **100**	
1206	**3009/022** **3009/040**	**CEC12 02S** **CEC12 04S**	**06 03**	**1 to 6 800** **1 to 5 600** **1 to 5 600** **1 to 3 900**	**16** **25** **50** **100**	
0603	**3009/037** **3009/040**	**CEC14 02S** **CEC14 04S**	**06 01**	**1 to 1 000** **1 to 680** **1 to 560** **1 to 330**	**16** **25** **50** **100**	
0402	**3009/042** **3009/040**	**CEC19 02S** **CEC19 04S**	**06 13**	**1 to 330** **1 to 120** **1 to 100** **1 to 82**	**10** **16** **25** **50**	

Maintenance Test Vehicles

designation	lot	Chart F4			
		1	2A	2B	3
CEC4 02 S 4.7nF+/-5% 100 V	V20060044	20	10	3	3
CEC6 02 S 27.4nF +/-1% 25V	MG313191100015	20	10	3	3
CEC6 02 S 18nF +/-5% 25V	V20040064	20	10	3	3
CEC7 02 S 68.1nF +/-1% 16V	MG313191100014		10		
CEC7 02 S 56.2nF +/-1% 25V	MG313191100024	20	10	3	3
CEC14 02 S 220pF +/-5% 50 V	MG313201000380	20	10	3	3
CEC14 04 S 1nF +/-5% 16V	MG313191000002	20	10	6	6
CEC4 04 S 10nF+/-2% 50V	V20040065	20	10	3	3

For Data supporting the transfer of ceramic production from MMRA site to FERRO site, see Annex 1bis, page 4bis.

Non compliance to ESCC requirements: 15

No.:	Specification	Paragraph	Non compliance

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

Executive Manager Disposition 17

Application Approval: Yes ☒ No ☐

Action / Remarks:

Date:

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

ANNEX 1: LIST OF TESTS DONE TO SUPPORT EXTENSION OF QUALIFICATION 18

Tests conducted in compliance with:

- ESCC 3009 generic specification; Chart V (for ESCC/QPL parts);
- Or PID-TFD Click here to enter text. (for ESCC/QML parts)

Tests vehicle identification/description:

300900406-4701JE DC 2027 **300904004-1002GC DC 2024**	**300900506-1802JA DC 2023** **300900506-2742FA DC 2037**	
300904001-1001JX DC 2101 **300903706-2200JC DC 2048**	**CEC7 02S 5622FA DC 2121** **300900606-6812FX DC 2049**	

Detail Specification reference: 3009/004/005/006/037/040, EFD 703.06.390 issue D

Chart F4	Test	Tick when done	Conditions	Date Code	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Environmental / Mechanical Subgroup	Mounting	☒	IEC 60384-1, 4.33	**2027** **2024** **2023** **2037** **2121** **2101** **2048**	**20** **20** **20** **20** **20** **20** **20**	**0**	
	Rapid Change of Temperature	☒	IEC 60068-2-14	**2027** **2024** **2023** **2037** **2121** **2101** **2048**	**20** **20** **20** **20** **20** **20** **20**	**0**	
	Steady State Humidity	☒	ESCC 3009, Para. 8.2	**2027** **2024** **2023** **2037** **2121** **2101** **2048**	**20** **20** **20** **20** **20** **20** **20**	**0**	
	Visual Inspection	☒	ESCC 3009, Para. 8.5	**2027** **2024** **2023** **2037** **2121** **2101** **2048**	**20** **20** **20** **20** **20** **20** **20**	**0**	
Endurance Subgroup	Mounting	☒	IEC 60384-1, 4.33	**2027** **2024** **2023** **2037** **2121** **2049** **2101** **2048**	**10** **10** **10** **10** **10** **10** **10** **10**	**0**	
	Operating Life	☒	ESCC 3009, Para. 8.9	**2027** **2024** **2023** **2037** **2121** **2049** **2101** **2048**	**10** **10** **10** **10** **10** **10** **10** **10**	**0**	**1 000H**
Electrical Subgroup	Mounting	☒	IEC 60384-1, 4.33	**2027** **2024** **2023** **2037** **2121** **2101** **2048**	**3** **3** **3** **3** **3** **6** **3**	0	

	Capacitance-Temperature Characteristics	☒	ESCC 3009, Para. 8.10	**2027** **2024** **2023** **2037** **2121** **2101** **2048**	**3** **3** **3** **3** **3** **6** **3**	**0**	**Done prior to mounting.**
	Robustness of Terminations	☒	ESCC 3009, Para. 8.7	**2027** **2024** **2023** **2037** **2121** **2101** **2048**	**3** **3** **3** **3** **3** **6** **3**	**0**	
Ass. / Capab. Subgroup	Solderability	☒	IEC 60068-2-58	**2027** **2024** **2023** **2037** **2121** **2101** **2048**	**3** **3** **6** **6** **6** **6** **3**	**0**	
	Permanence of Marking	☐	ESCC 24800				**NA**

ANNEX 1bis: LIST OF TESTS DONE TO SUPPORT VALIDATION OF CERAMIC PRODUCTION TRANSFER FROM MRA TO FERRO 18

Tests conducted in compliance with:

- ESCC 3009 generic specification; Chart V (for ESCC/QPL parts);
- Or PID-TFD [illegible] (for ESCC/QML parts)

Tests vehicle identification/description:

Ceramic	LVT1 / LVT2A	K Theta
K21	CEC7 02S 4,7nF 100V Lot V2002L001	CEC7S 4,7nF 100V 5% Lot D1909L006 (SFi) CEC2S 100pF 50V 5% Lot D1911L010 (SFi)
K85	CEC14 02S 1,0nF 5% 16V Lot V2001L002 CEC7 02S 27nF 5% 100V Lot V2001L003	CEC14S 1nF 16V 5% Lot D1909L008 (SFi) CEC7S 27nF 100V 5% Lot D1909L010 (SFi)

Detail Specification reference: -

Chart F4	Test	Tick when done	Conditions	Date Code	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Environmental / Mechanical Subgroup	Mounting	☒	IEC 60384-1, 4.33	2002L001 2001L002 2001L003	26 26 26	0	
	Rapid Change of Temperature	☒	IEC 60068-2-14	2002L001 2001L002 2001L003	26 26 26	0	
	Steady State Humidity	☒	ESCC 3009, Para. 8.2	2002L001 2001L002 2001L003	26 26 26	0	
	Visual Inspection	☒	ESCC 3009, Para. 8.5	2002L001 2001L002 2001L003	26 26 26	0	
Endurance Subgroup	Mounting	☒	IEC 60384-1, 4.33	2002L001 2001L002 2001L003	39 39 26	0	
	Operating Life	☒	ESCC 3009, Para. 8.9	2002L001 2001L002 2001L003	39 39 26	0	2 000H
Electrical Subgroup	Mounting	☐	IEC 60384-1, 4.33			-	
	Capacitance-Temperature Characteristics	☒	ESCC 3009, Para. 8.10	D1909L006 D1911L010 D1909L008 D1909L010	3 3 3 3	0	Done prior to mounting.
	Robustness of Terminations	☐	ESCC 3009, Para. 8.7			-	
Ass. / Capab. Subgroup	Solderability	☐	IEC 60068-2-58			-	
	Permanence of Marking	☐	ESCC 24800				NA

For cross reference between SFi (semi-finished) lots tested for Capacitance Temperature Characteristics and flight parts submitted to LVT see also page 1 of the appended synthesis.