	APPLICATION FOR ESCC QUALIFICATION APPROVAL	Page 1
ESCC	Component Title: Capacitors Filters, C-type, Feed through, Hermetically Sealed (One End Only), based on type SFC030	Appl. No.
	Executive Member: CNES Date: 27/07/2021	375

Components (including series and families) submitted for Qualification Approval — 1

ESCC COMPONENT. NO.	VARIANTS	RANGE OF COMPONENTS	BASED ON	TEST VEHICLE / S	COMPONENT SIMILAR
3008/020	01	Solder Case, Hermetical input, 50V @ +85°C	SFC030-3---SV50	30080201B223MC 300802001B223MC (x2)	
	02	Solder Case, Hermetical input, 100V @ +85°C	SFC030-3---SV100	30080202B222ME	
	04	Solder Case, Hermetical output, 50V @ +85°C	SFC030-3---SV50-R	300802004C333MC	
	05	Solder Case, Hermetical output, 100V @ +85°C	SFC030-3---SV100-R		X

Component Manufacturer — 2
EXXELIA SAS

Location of Manufacturing Plant — 3
1, rue des Temps Modernes
77 600 CHANTELOUP en BRIE
FRANCE

ESCC Specification used for Qualification — 4
Generic: 3008
Issue 3
Detail/s: 3008/020
Issue 3

Qualification Report Reference and date: — 5
Chart III Data in appendix 1
Data Packages 20-1178, 20-1179, 21-0005, 21-0008, 21-0004
Date: 10/05/2021

PID used for manufacturing Qualification Lot — 6
Ref No: 505.95.390
Issue: J
Date: 31/03/2021

PID changes since start of qualification — 7
None ☐
Minor* ☒
Major* ☐
(* Details not published, provided in confidential annex 2.)

Current **PID** Verified by JP Bussenot, CNES — 8
Name of Executive Representative
Ref No: 505.95.390
Issue: K
Date: July 2021

Current Manufacturing facilities surveyed by: JP Bussenot, CNES — 9
(Name of Executive Responsible) (Date)

Report Reference: No audit performed to validate the new PID due to sanitary situation

Satisfactory: Yes ☐ No ☐ Explain: Last ESA / CNES visit at EXXELIA on filters performed in January 2020. CNES report DSO/AQ/CQ-2020/0022292, 16/01/2020, refers.

Quality and Reliability Data — 10

Evaluation testing performed Yes ☒ No ☐

Report Ref. No.: 200522_AMe FEEDTHROUGH CAPACITOR FILTERS – IMPROVEMENT REPORT Date: 22/05/2020 June 29 update

Equivalent Data: Original evaluation performed in the 1994

Certification:

Validation report for process changes to resolve +125°C Insulation Resistance issues supplemented with systematic endurance testing on customers lots (see synthesis in appendix 3)

Failure analysis, DPA, NCCS available Yes ☒ No ☐

(supply data) See appendix 2

Ref Nos. and purpose:

NCCS 2CETE102 – Production and testing of ESCC qualification lots – As a result of multiple endurance problems found on threaded package filters, current application for ESCC qualification approval is limited to solder type SFC030 per ESCC 3008/020

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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 13; that the reports and data are available at the ESCC Executive and therefore applies for ESCC qualification status to be given to the component(s) listed herein.

Date: 30/07/2021

JP. BUSSENOT
(Signature of the Executive Coordinator)

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Continuation of Boxes above: (Only non-confidential comments)

Box 1: Test Vehicles

ESCC Part Number	EXXELIA Type	Lot	Date Code	Report	Notes
30080202B222ME	SFC030 3 222 SV 100 HT Lev B	MG313 20 10 00783	20.48	20-1178	[4, 5]
30080201B223MC	SFC030 3 223 SV 050 Lev B	MG313 20 10 00785	20.48	20-1179	[5]
300802004C333MC	SFC030 3 333 SV 050 HT R Lev C	MG313 20 10 00773	20.48	21-0005	[1, 4]
300802001B223MC	SFC030 3 223 SV 050 Lev B	MG313 20 10 00781	20.48	21-0008	[2]
300802001B223MC	SFC030 3 223 SV 050 Lev B	MG313 20 10 00751	20.46	21-0004	[3]

Notes:

[1] Case different from PID version

Gold case 10321 10 D : No copper core (package available)

	Connection	L connection In	L connection Out	Vue 3D
10 321 10 (used)	FeNi without Copper core (slightly greater Rs)	6,5mm	1,5mm	
10 321 07 (expected)	FeNi with Copper core	6,5mm	6,5mm	

[2] A57S capacitor soldering instead of A67S for the other test vehicules (different supplier and solder, lot removed from qualification perimeter as per NC 2CETE102, PID updated accordingly)

[3] Alternate soldering process

[4] HT versions are currently using the same definition as the “non HT” versions

[5] Wrong ESCC numbering, “0” missing in the variant identification

Non compliance to ESCC requirements: 13

No.:	Specification	Paragraph	Non compliance
1	3008	Chart IV	As per ESCC Executive / EXXELIA agreement, qualification testing performed against Chart F4 from ESCC 3008 issue 4 draft H under PSWG review as a pilot exercise.

Additional tasks required to achieve full compliance for ESCC qualification or rationale for acceptability of noncompliance: 14

None

Executive Manager Disposition 15

Application Approval: Yes ☒ No ☐

Action / Remarks:

Date:

Britta Schade

Digitally signed by Britta Schade
Date: 2021.10.07 18:40:53 +02'00'

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

ANNEX 1: LIST OF TESTS DONE TO SUPPORT QUALIFICATION 16

Tests conducted in compliance with:

- ESCC 3008 generic specification; Chart **F4B** (for ESCC/QPL parts); **Pilot exercise before introduction of new Chart F4 in ESCC 3008**
- Or PID-TFD Click here to enter text. (for ESCC/QML parts)

Tests vehicle identification/description: *(Lot info between parenthesis)*

30080201B223MC DC 20.48 (179) 300802001B223MC DC 20.46 (004), 20.48 (008)	300802004C333MC DC 20.48 (005)
30080202B222ME DC 20.48 (178)	

Detail Specification reference: 3008/020

Chart **F4B**	Test	Tick when done	Conditions	Date Code **or Lot info**	Tested Qty	N° of Rejects	Comments if not performed. Comments on Rejection
Environmental / Mechanical Subgroup **1A**	Temperature Rise	☒	ESCC 3008, Para 9.9	178 179 005 008 004	4 x 3 3	0	
	Overload	☒	ESCC 3008, Para 9.16	178 179 005 008 004	4 x 3 3	0	*Performed before Low Air Pressure for practical reasons, to be reviewed during updating of ESCC 3008*
	Low Air Pressure	☒	IEC 68-2-13	178 179 005 008 004	4 x 3 3	0	
	Permanence of Marking	▱	*ESCC 24800*				*Moved to Assembly Capability subgroup*
	Seal Test (Hermetic)	☐	IEC 68-2-17				Not applicable
	Damp Heat (Non-Hermetic)	☒	ESCC 3008, Para 9.24	178 179 005 008 004	4 x 3 3	0	Low voltage (1,5V) 168H 85/85 test
	External Visual Inspection	▱	*ESCC 20500*				*Part of Damp Heat final requirements*
Environmental / Mechanical Subgroup **1B**	Vibration	☒	IEC 68-2-6	178 179 005 008 004	4 x 3 3	0	
	Shock	☒	IEC 68-2-27	178 179 005 008 004	4 x 3 3	0	
	Immersion	☐	ESCC 3008, Para 9.15				Not applicable to non-hermetically sealed parts
	Resistance to Soldering Heat	▱	*IEC 68-2-20*				*EXXELIA considered the test as destructive. Moved to add. tests*
	Seal Test (Hermetic)	☐	IEC 68-2-17				Not applicable
	Damp Heat (Non-Hermetic)	☒	ESCC 3008, Para 9.24	178 179 005 008 004	4 x 3 3	0	Low voltage (1,5V) 168H 85/85 test

	Corrosion Test	☐	*IEC 68-2-11*				*Removed from ESCC requirements*
Environmental / Mechanical Subgroup **1C**	Shock	☒	IEC 68-2-27	178 179 005 008 004	4 x 3 3	0	
	Rapid Change of Temperature	☒	IEC 68-2-14, Test Na	178 179 005 008 004	4 x 3 3	0	Added to Chart F4
	Solderability	☐	*IEC 68-2-20*				*Moved to Assembly Capability subgroup*
	Robustness of Terminations	☐	*IEC 68-2-21*				*Moved to Assembly Capability subgroup*
	Accelerated Damp Heat	☒	ESCC 3008, Para 9.12	178 179 005 008 004	4 x 3 3	0	*EXXELIA comment on applicability (referring to current3008/020 deviation) to be reviewed during updating of ESCC 3008*
	Seal Test (Hermetic)	☐	IEC 68-2-17		4 x 3 3		Not applicable
	Damp Heat (Non-Hermetic)	☒	ESCC 3008, Para 9.24	178 179 005 008 004	4 x 3 3	0	Low voltage (1,5V) 168H 85/85 test
	External Visual Inspection	☐	*ESCC 20500*				*Part of Damp Heat final requirements*
Endurance Subgroup	Operating Life	☒	ESCC 3008, Para 9.19	178 179 005 008 004	22 22 22 16 16	0	
	Electrical Measurements during Endurance Testing	☒	ESCC 3008, Para 9.4.5	178 179 005 008 004	22 22 22 16 16	0 0 0 1 0	Note a sudden drop of Ri125 after 2 000H on Sn33 (Lot 178), Sn 17 (Lot 008 – failed part, lot removed as per NC 2CETE102) and Sn16 (Lot 004)
	Seal Test (Hermetic)	☐	IEC 68-2-17				Not applicable
	Damp Heat (Non-Hermetic)	☐	ESCC 3008, Para 9.24	178 179 005 008 004	22 22 22 16 16	0	Low voltage (1,5V) 168H 85/85 test
	External Visual Inspection	☐	*ESCC 20500*				*Part of Damp Heat final requirements*
Assembly Capability Subgroup	Solderability	☒	IEC 68-2-20	178 179 005 008 004	4 x 5	0	DC resistance measurement performed
	Permanence of Marking	☒	ESCC 24800	178 179 005 008 004	4 x 5	0	
	Robustness of Terminations	☒	IEC 68-2-21	178 179 005 008 004	4 x 5	0	Voltage drop measurement performed

Additional tests	*Resistance to Soldering Heat*	☒	*IEC 68-2-20, +235°C*	*178 179 005 008 004*	*3 x 5*	*0*	*EXXELIA considered the test as destructive. Moved from subgroup 1B to dedicated parts*
	DPA	☒	ESCC 21001	178 179 005 008 004	5 x 3	-	See appendix 1
	Rapid Change of Temperature	☒	IEC 68-2-14, Test Na	178 179 005	10 x 3	0	Extended to 100 cycles, see appendix 3, part 2

Results of lot 008 are included in the summary but the solder used is not retain in the qualification domain as per NC 2CETE102.

NOTES ON THE COMPLETION OF THE APPLICATION FORM FOR ESCC QUALIFICATION APPROVAL

ENTRIES

Form Heading	shall indicate:— the title of the component as given in its detail specification or the name of the series or family; — the entering date; — the serial number and the suffix of the form.
Box 1	shall provide details given in table; in particular there shall be listed - the variants or range of variants; the range of components by using the ESCC code for values tolerances, etc.; the designation given in detail specification as 'based on'; ---under Test Vehicle enter either a cross or the specific characteristic capable to identify the component tested; — under component similar enter a cross.
Box 2 and 3	Manufacturer's name and location of plant where the components were manufactured and tested.
Box 4	Generic and detail specifications used during qualification program.
Box 5	Reference to test report(s) submitted in support of application.
Box 6	Enter details to identify the PID that was applicable at the time the qualification lot was manufactured.
Box 7	If the PID was evolved after qualification lot manufacture, adequate details of such evolution shall be provided together with reasons for changes. Major changes shall be clearly marked.
Box 8	The box serves to identify the current PID and the Executive Representative that has verified it together with the date of this occurrence.
Box 9	This box can be completed only after a physical visit to the plant to confirm that the practices, procedures, materials, 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 10	Details entered shall be sufficient to evidence that an evaluation program according to ESCC Basic Specification No. 22600 has been performed and that the results thereof are summarized in the survey and test reports. If the evaluation program has not been carried out according to established ESCC documents, the applicant Executive Representative shall provide alternative data and declare its assessed degree of satisfactory compliance with the ESCC basic requirements. Reference shall be made to the reports on Destructive Physical Analysis (DPA), Failure Analysis and Non conformance (NCCS) issued during the Evaluation and/or Qualification Phase.
Box 11	Enter the name of the Executive Coordinator and the signature.
Box 12	To be used when there is a need to expand any of the boxes from 1 through 10. Identify box affected and reference the Box 12 in the relevant Box. Box 12 can be broken into 12a, 12b, etc. if several Boxes have to be expanded.
Box 13	Fill table as requested.
Box 14	Fill in any additional tasks required to achieve full compliance.
Box 15	All Executive recommendations on the application itself, special conditions or restrictions, modifications of the QPL or ESCC QML entry, letters to the manufacturer, etc. shall be entered clearly in Box 15, signed by the ESA Representative.
Box 16	Fill in Table as requested.
Box 17	Confidential details of PID changes shall be provided.
Box 18	State noncompliance with reference to specification(s) and paragraph(s). To simplify reference in Box 18 each nonconformance shall be sequentially numbered. If relevant state 'None'
Box 19	Any additional action deemed necessary by the Executive Representative 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 nonconformance.
Box 20	Additional Comments