**APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL**

Component Title: Capacitors, Fixed, Surface Mount, D.C Self-Healing, Non-Inductive, Polyterephtalate Dielectric, Based on Type PM94S

Executive Member: CNES Date: 03/08/2015



Appl. No. 270F

1 Components (including series and families) submitted for Extension of Qualification Approval:

| ESCC COMPONENT NO. | VARIANTS | RANGE OF COMPONENTS | BASED ON | TEST VEHICLE / S | COMPONENT SIMILAR |
|---|---|---|---|---|---|
| 3006 024 | 01 to 04 | 2.2µF to 47µF 50V ±10/20%<br>1.5µF to 22µF 63V ±10/20% | PM94S | PM94S-4 15µF 63V | |
| | | 560nF to 12µF 100V ±10/20% | | | |
| | | 330nF to 5.6µF 200V ±10/20%<br>220nF to 4.7µF 250V ±10/20% | | PM94S-1 150nF 250V | |
| | | 100nF to 1.8µF 400V ±10/20% | | PM94S-1 82nF 400V | |

2 Component Manufacturer
EXXELIA Technologies, ex-EUROFARAD

3 Location of Manufacturing Plant(s)
105, rue du Général Leclerc
67441 MARMOUTIER
FRANCE

4 Date of original qualification approval:
Date: 15/08/2002

Certificate Ref No. 270

5 ESCC Specifications used for Maintenance of qualification testing:
Generic: 3006 Issue: 1
Detail(s): 3006/024 Issue: 5
EFD 573.00.390 Issue: F

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:
PV 14/0118, Feb. 2014 & 15/0402, June 2015
PV 14/0137, Feb. 2014 & 15/0402, June 2015
PV 14/0150, July 2014 & 15/0381, May 2015

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 |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

9 **PID** changes since start of qualification
None ☒
Minor* ☐
Major* ☐ *Provide details in box:

10 Current **PID** Verified by: CNES
Name of Excutive Representative
Ref No: 581.00.390
Issue: H Date: 29/07/2015
Rev Date: 01/07/2013

11 Current Manufacturing facilities surveyed by: ESA and CNES on 11/02/2015
(Name of Executive Representative) (Date)

Satisfactory: Yes ☒ No ☐ Explain

Report Reference: CNES DCT/AQ/CQ-2015/02955, 17/02/2015

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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: 03/08/2015

JP. BUSSENOT

(Signature of the Executive Coordinator)

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Continuation of Boxes above:

Maintenance performed as planned on SMD versions. Testing performed for introduction of leaded variants not proposed at this stage since DCR to introduce these variants in ESCC 3006/024 and PID up-dating have not been done yet.

Les essais à réaliser ci-dessous reflètent l'accord CNES/EUROFARAD du 21 novembre 2014 pour le maintien de la validité du certificat 270 valide jusqu'en août 2015.

| Stock PMS94S | | | | | | | Essais à effectuer |
|---|---|---|---|---|---|---|---|
| Désignation | Date Code | Lot | Quantité dispo | Niveau | PV | Spéc | |
| PM 94S-4 15µF ±10% 63V | 14-21 | 20313110491 | 46 | B- | 14/0590 | ESCC | LAT1 à effectuer sur 34 pièces |
| PM 94S-1 150nF ±10% 250V | 14-04 | 20313060550 | 27 | C3 | 14/0137 | EFD | LAT1 groupé sur 17 pièces de chaque lot |
| PM 94S-1 82nF ±10% 400V | 14-04 | 20313060549 | 22 | C3 | 14/0118 | EFD | |

Les pièces des deux lots de date code 1404 ont été déverminées avec les conditions de la spécification de détail EFD, soit +125°C sous Ur. Pour rappel, la spécification ESCC requiert +100°C sous 1.25Ur.

Ce point, représentatif d'approvisionnements clients, a été jugé techniquement acceptable par le CNES et sera identifié dans les rapports transmis au CNES.

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Non compliance to ESCC requirements:

| No.: | Specification | Paragraph | Non compliance |
|---|---|---|---|
| 1 | 3006/024 | Table 5 | Conditions for Burn-In per EUROFARAD 573.00.390 specification are 1.0 Ur @ +125°C instead of 1,25 Ur @ +100°C in ESCC 3006/024 |

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

None, both conditions are equivalent in the Rated Voltage versus Temperature maximum rating curve (Figure 1 of ESCC detail specification).

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Executive Manager Disposition

Application Approval: Yes ☐ No ☐

Action / Remarks:

Date:

Signature, ESA Representative

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

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Tests conducted in compliance with:

- ESCC 3006 generic specification; Chart V (for ESCC/QPL parts);
- Or PID-TFD (for ESCC/QML parts)

Tests vehicle identification/description:

| | |
|---|---|
| PM94S-1 150nF 250V date code 1404 (EFD spec) | 300602404B 156KD, i.e. PM94S-4 15µF 63V date code 1421 |
| PM94S-1 82nF 400V date code 1404 (EFD spec) | |

Detail Specification reference: 3006/024

| 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 Teminations | ☒ | IEC 68-2-21 | 1404<br>1421 | 2 + 2<br>4 | 0 | |
| | Resistance to Soldering Heat | ☒ | IEC 68-2-20 | 1404<br>1421 | 2 + 2<br>4 | 0 | |
| | Climatic Sequence | ☒ | ESCC 3006, Para. 9.14 | 1404<br>1421 | 2 + 2<br>4 | 0 | |
| | Seal Test | ☐ | IEC 68-2-17 | | | | NA |
| Environmental / Mechanical Subgroup (Column 2) | Rapid Change of Temperature | ☒ | IEC 68-2-14 | 1404<br>1421 | 2 + 2<br>4 | 0 | |
| | Vibration | ☒ | IEC 68-2-6 | 1404<br>1421 | 2 + 2<br>4 | 0 | |
| | Shock or Bump | ☒ | ESCC 3006, Para. 9.13 | 1404<br>1421 | 2 + 2<br>4 | 0 | |
| | Climatic Sequence | ☒ | ESCC 3006, Para. 9.14 | 1404<br>1421 | 2 + 2<br>4 | 0 | |
| | Seal Test | ☐ | IEC 68-2-17 | | | | NA |
| Endurance Subgroup | Operating Life | ☒ | ESCC 3006, Para. 9.16 | 1404<br>1421 | 8 + 8<br>16 | 0 | |
| | Electrical Measurements during Endurance Testing | ☒ | ESCC 3006, Para. 9.6.5 | 1404<br>1436 | 8 + 8<br>16 | 0 | |
| Electrical Subgroup (Electrical Measurements) | High and Low Temperature Stability | ☒ | ESCC 3006, Para. 9.15 | 1404<br>1421 | 3 + 3<br>6 | 0 | |
| | Electrical Measurements at Room Temperature | ☒ | ESCC 3006, Para. 9.6.4 | 1404<br>1421 | 3 + 3<br>6 | 0 | |
| | External Visual Inspection | ☒ | ESCC 20500 | 1404<br>1421 | 3 + 3<br>6 | 0 | |
| Electrical Subgroup (Assembly / Capability Tests | Solderability | ☒ | IEC 68-2-20 | 1404<br>1421 | 2 + 2<br>4 | 0 | |
| | Permanence of Marking | ☒ | ESCC 24800 | 1404<br>1421 | 2 + 2<br>4 | 0 | |

| Chart V | Test | Tick when done | Conditions | Date Code | Tested Qty | No. of Rejects | Comments if not performed. Comments on Rejection |
|---|---|---|---|---|---|---|---|
| Additional Tests | | ☐ | | | | | |
| | | ☐ | | | | | |
| | | ☐ | | | | | |

***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. |