APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL

Component Title: DIODES, MICROWAVE, SILICON, MULTIPLIER, PIN AND VARACTOR, BASED ON TYPES DH 2XX, DH 50XXX AND DH76XXX

Executive Member: CNES Date: 27/07/2023

Appl. No. 225K

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
5512/016	10 to 57		DH252, EH252, DH256, EH256, DH267, EH267, DH292, EH292, DH294 and EH294		
5513/031	01 to 49, 57 to 63		DH50151 to DH50157 and EH50151 to EH50157		
5513/032	01 to 35, 41 to 45		DH50033 to DH50037 and EH50033 to EH50037	5513/032-16	
5513/033	01 to 49, 56, 63, 71 to 79		DH50201 to DH50209 and EH50201 to EH50209		
5513/034	1 to 36, 42 to 47		DH50251 to DH50256 and EH50251 to EH50256	5513/034-30, 36	
5513/036	1 to 42, 49 to 54		DH50052 to DH50057 and EH50052 to EH50057		
5513/037	01 to 49, 57 to 63		DH50071 to DH50077 and EH50071 to EH50077		
5513/038	01 to 49, 57 to 63		DH50101 to DH50107 and EH50101 to EH50107		
5512/023	1 to 7, 10 to 16, 19 to 25, 28 to 34, 37 to 43, 46 to 52, 55 to 61, 64 to 70, 73 to 80		DH76XXX and EH76XXX	5512/023-61	

2 Component Manufacturer

EXENS Solutions

3 Location of Manufacturing Plant(s)

3 avenue de Pacifique – Z.A. de Courtaboeuf
91940 Les Ulis
France

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Date of original qualification approval:
Date: 01/06/1995

Certificate Ref No. 225

5 ESCC Specifications used for Maintenance of qualification testing:

Generic: 5010 Issue: 3

Detail(s): 5512/016 Issue: 7
5512/032 Issue: 7
5513/034 Issue: 7
5512/023 Issue: 7

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:

20230520760-223, 16/05/2023
20230520772-223, 22/05/2023
20230320446-223, 20/06/2023
20230520759-223, 15/05/2023

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
Various		Chart F4	Various (2021 to 2023)	> 2000

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PID changes since start of qualification

Current **PID Verified by:** J. L. Roux, CNES

Name of Excutive Representative

None ☐

Minor* ☒

Major* ☐ *Provide details in box:

Editorial

Ref No: 350

Issue: I Date: 01/06/2023

Rev Date: 01/06/2023

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Current Manufacturing facilities surveyed by: S. Hernandez, ESA and J. L. Roux, CNES 07/09/2022

(Name of Executive Representative) (Date)

Satisfactory: Yes ☒ No ☐ Explain

Report Reference: DTN/QE/EC-2022-0013332

Non compliance to ESCC requirements: 15

No.:	Specification	Paragraph	Non compliance
1	5010	Chart 4A	1 failure after thermal cycling (see Non Conformance 2CEXE303)

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:

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

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Failure Analysis, DPA, NCCS available: Yes ☒ No ☐ (Supply data) NC 1CCOB001

Ref. No's and purposes: NCCS 2CEXE301 (Closed): Exceeding the authorized deadlines for the renewal of qualification
NCCS 2CEXE303 (Closed): Thermal stress on package due to the use of an incorrect soldering tool

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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: 27/07/2023

Gianandrea Quadri
G. QUADRI
(Signature of the Executive Coordinator)

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Continuation of Boxes above:

2 : New manufacturer name is EXENS Solutions (ex. Cobham Microwave)
3 : New adress since 2022

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

Tests conducted in compliance with:

- ESCC 5010 generic specification; Chart V (for ESCC/QPL parts);
- Or PID-TFD (for ESCC/QML parts)

Tests vehicle identification/description:

DH76100-561Q (5512/023-61)	DH76100 - Pill G package
DH50035-516Q (5513/032-16)	DH50035 – Pill B package
DH50255-530Q (5513/034-30)	DH50255 – Pill B package
DH50256-536Q (5513/034-36)	DH50256 – Pill G package

Detail Specification reference: ESCC 5512/023, 5513/032, 5513/034

Chart F4	Test	Tick when done	Conditions	Date Code Diffusion Lot	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Environmental/Mechanical Subgroups	Thermal Cycling	☒	ESCC 5010 Para. 8.8.2	DC2247 DC2251 DC2244 22H001A 22J003A 22V031A	4 x 6	0	Performed on : DH76100 Pill G, DH50035 Pill B, DH50255 Pill B, DH50256 Pill G
	Mechanical Shock Test	☐	MIL-STD-750 Test Method 2016				Not applicable
	Vibration Test	☐	MIL-STD-750 Test Method 2056				Not applicable
	Constant Acceleration	☐	MIL-STD-750 Test Method 2006				Not applicable
	Seal Test	☐	MIL-STD-750 Test Method 1071				Not applicable
	Moisture Resistance	☒	MIL-STD-750 Test Method 1021	Same as above	4 x 6	0	Performed on : DH76100 Pill G, DH50035 Pill B, DH50255 Pill B, DH50256 Pill G
	Seal Test	☒	MIL-STD-750 Test Method 1071	Same as above	4 x 6	0	Same as above
	Electrical Measurements at Room Temp.	☒	Table 2 of the Detail Specification	Same as above	4 x 6	0	Same as above
	External Visual Inspection	☒	ESCC Basic Specification No. 20500	Same as above	4 x 6	0	Same as above
Endurance Subgroup	Operating Life	☒	MIL-STD-750 Test Method 1026	Same as above	4 x 10	0	Same as above
	Electrical Measurements during Endur. Test	☒	Table 6 of the Detail Specification	Same as above	4 x 10	0	Same as above
	Seal test	☒	MIL-STD-750 Test Method 1071	Same as above	4 x 10	0	Same as above
	External Visual Inspection	☒	ESCC Basic Specification No. 20500	Same as above	4 x 10	0	Same as above

Chart F4	Test	Tick when done	Conditions	Date Code Diffusion Lot	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Assembly Capability Suggroup Tests	Solderability Test	☒	MIL-STD-750 Test Method 2026	Same as above	4 x 2	0	Same as above
	Permanence of Marking	☐	ESCC Basic Specification No. 24800				Not applicable
	Terminal Strength	☐	MIL-STD-750 Test Method 2036				Not applicable
De-encapsulation Subgroup	Thermal Impedance Test	☒	MIL-STD-750 Test Method 3101	Same as above	4 x 4	0	Performed on : DH76100 Pill G, DH50035 Pill B, DH50255 Pill B, DH50256 Pill G
	Forward Voltage Test	☒	MIL-STD-750 Test Method 4011	Same as above	4 x 4	0	Same as above

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.