



APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL

Component Title: TRANSISTORS, MICROWAVE, SMALL SIGNAL, SILICON, BIPOLAR, BASED ON TYPES BFY405, BFY420 AND BFY450
Executive Member: German Space Agency at DLR Date: 19/10/2023

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

Table with 6 columns: ESCC COMPONENT NO., VARIANTS, RANGE OF COMPONENTS, BASED ON, TEST VEHICLE / S, COMPONENT SIMILAR. Row 1: 5611/008, 01 to 03, BFY405, BFY420, BFY450, BFY420(ES), X

Table with 3 columns: Component Manufacturer (Infineon Technologies AG), Location of Manufacturing Plant(s) (Villach, Austria and Regensburg, Germany), Date of original qualification approval (1997), Certificate Ref No. (245, initial: Juni 1997)


Table with 3 columns: ESCC Specifications used for Maintenance of qualification testing (Generic: 5010, Issue: 3; Detail(s): 5611/008, Issue: 4), Deviations to LVT testing and Detail Specification used (No [checked], Yes []), Deviation from current Specifications (No [checked], Yes []), Qualification Extension Report reference and date (2236LR50, Iss. 1, Aug. 2023)

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

Table with 5 columns: Project Name, Testing Level, LAT, Date code, Quantity Delivered. Row 1: Confidential

Table with 2 columns: PID changes since start of qualification (None [], Minor* [checked], Major* []), Current PID Verified by: Burak Gökgöz, German Space Agency at DLR. Includes Name of Executive Representative, Generic PID, and Detail PID.

Table with 2 columns: Current Manufacturing facilities surveyed by: Burak Gökgöz, German Space Agency at DLR on 19-20/09/2023. Satisfactory: Yes [checked], No []. Report Reference: INFINEON-AUD-DLR-09-2023

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<p>Failure Analysis, DPA, NCCS available: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (Supply data)</p> <p>Ref. No's and purposes:</p>		12
<p>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 DLR as the responsible Executive Member for ESCC qualification status to be extended to the component(s) listed herein.</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <div data-bbox="193 775 392 797"> <p>Date: 06/11/2023</p> </div> <div data-bbox="475 607 711 815" style="font-size: 2em; font-weight: bold;"> <p>Burak Goekgo ez</p> </div> <div data-bbox="722 602 986 824" style="font-size: 0.8em;"> <p>Digital signiert von Burak Goekgoez DN: C=DE, S=Nordrhein-Westfalen , L=Koeln, O=Deutsches Zentrum fuer Luft- und Raumfahrt e.V. (DLR) , SN=Goekgoez, G=Burak, CN= Burak Goekgoez Grund: Ich bin der Verfasser dieses Dokuments Ort: Bonn Datum: 2023.11.06 13:52:59+01'00' Foxit PDF Editor Version: 13.0.0</p> </div> <div data-bbox="1027 775 1422 824" style="border-top: 1px solid black; padding-top: 2px;"> <p align="right">Burak Gökğöz, German Space Agency at DLR (Signature of the Executive Coordinator)</p> </div> </div>		13
<p>Continuation of Boxes above:</p>		14



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Non compliance to ESCC requirements:

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No.:	Specification	Paragraph	Non compliance

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

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Executive Manager Disposition

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Application Approval: Yes No

Action / Remarks:

Date:

B. Schade: Head of the 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 5010 generic specification; Chart F4A (for ESCC/QPL parts)

Tests vehicle identification/description:

2236LR50, 2239A

BFY420(ES), EnvMechSG, Endur.SG, AssCapSG, DecapSG

Detail Specification reference:

5611/008

Chart F4A	Test	Tick when done	Conditions	Date Code	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Environmental/Mechanical Subgroups	Thermal Shock Test	<input checked="" type="checkbox"/>	ESCC 5010 Para. 9.5.2	2239A	12	0	
	Shock Test	<input type="checkbox"/>	MIL-STD-750 Test Method 2016				n.a. acc. Detail Spec
	Vibration Test	<input type="checkbox"/>	MIL-STD-750 Test Method 2056				n.a. acc. Detail Spec
	Constant Acceleration	<input type="checkbox"/>	MIL-STD-750 Test Method 2006				n.a. acc. Detail Spec
	Seal Test	<input type="checkbox"/>	MIL-STD-750 Test Method 1071				n.a. acc. Detail Spec
	Moisture Resistance	<input checked="" type="checkbox"/>	MIL-STD-750 Test Method 1021	2239A	12	0	
	Seal Test	<input checked="" type="checkbox"/>	MIL-STD-750 Test Method 1071	2239A	12	0	
	Electrical Measurements at Room Temp.	<input checked="" type="checkbox"/>	Table 2 of the Detail Specification	2239A	12	0	
	External Visual Inspection	<input checked="" type="checkbox"/>	ESCC Basic Specification No. 20500	2239A	12	0	
Endurance Subgroup	Operating Life	<input checked="" type="checkbox"/>	MIL-STD-750 Test Method 1026	2239A	20	0	
	Electrical Measurements during Endur. Test	<input checked="" type="checkbox"/>	Table 6 of the Detail Specification	2239A	20	0	
	External Visual Inspection	<input checked="" type="checkbox"/>	ESCC Basic Specification No. 20500	2239A	20	0	
Electrical Subgroup – Assembly Capability Tests	Solderability Test	<input checked="" type="checkbox"/>	MIL-STD-750 Test Method 2026	2239A	6	0	
	Permanence of Marking	<input type="checkbox"/>	ESCC Basic Specification No. 24800				n.a. due to laser marking
	Terminal Strength	<input checked="" type="checkbox"/>	MIL-STD-750 Test Method 2036	2239A	6	0	
De-encapsulation Tests	Internal visual inspection	<input checked="" type="checkbox"/>	ESCC Basic Specification No. 20400	2239A	6	0	
	Bond Strength	<input checked="" type="checkbox"/>	MIL-STD-750 Test Method 2037	2239A	6	0	
	Die Shear	<input checked="" type="checkbox"/>	MIL-STD-750 Test Method 2017	2239A	6	0	



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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.