



APPLICATION FOR EXTENSION OF ESCC PROCESS CAPABILITY APPROVAL

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Appl. No.

349A

PROCESS CAPABILITY DOMAIN: Low Frequency and Power Hybrid Line**Executive Member: ESA**

Date: 11/05/2021

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Capability domain submitted for approval:

Capability Domain Description	Process Capability Abstract	Based on Technology	Test Structures	Component Proposed for Qualification
Low frequency and power Hybrids	Attached as Appendix	See appendix	(option 1)	N.A. (renewal)
Manufacturer: Thales Alenia Space Belgium	Location of manufacturing plant(s): Rue Chapelle Beaussart 101 B-6032 Mont-sur-Marchienne (Charleroi) Belgium	ESCC Specifications used for Process Capability Approval : ESCC 2566000, Issue 2 (2014)		
Report reference: DPA reports -TASB-AQ-DIV-21003 80960214G01_VOL - F95437/42063A - SN04 - PID recertification (RGA & DPA) - DC:20-08 type LPLC -TASB-AQ-DIV-21004 80950045G01_VOL - F95449/41351A - SN12 - PID recertification (RGA & DPA) - DC:19-21 type MOS4 -TASB-AQ-DIV-21005 80900837G01_VOL - F95388/41352A - SN03 - PID recertification (RGA & DPA) - DC:18-39 type HLS8	PID used for initial Process Capability Approval: Reference No. : 9100.0683 Issue : 7.2 Revision : - Date: 2019			
PID Changes since start of Process Capability Approval None <input type="checkbox"/> Minor* <input checked="" type="checkbox"/> Major* <input type="checkbox"/>	Current PID verified by: A. Collado, ESA Name of Executive Representative Ref. No.: 9100.0683 Issue / Rev : 8.2 Date : 30/01/2021			
Current Manufacturing Facilities and Quality System surveyed by: not performed in 2020 – 2021 due to Covid2019 restrictions				
Executive Agency: ESA Date: 31/01/2018 Report Reference Number: IND_TCH_HYB_MOM-180009				
Satisfactory: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Corrective Actions Closed Out: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>				
Quality and Reliability Data				
Evaluation testing performed Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Report Ref. No.: All reports related to the evolution of the PID have been reviewed and accepted to support the extension of certification. dates: see box 12 Equivalent data: references in PID (provide details) Certification: yes				
Failure Analysis, DPA, NCCS: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (supply data) Ref. Nos. and purpose: DPA for extension of certification, references in box5.				

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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 evidenced except as stated in box 13; that the reports and data are available at the ESCC Executive and therefore applies for ESCC Capability Approval status to be given to the capability domain defined herein.

Date:

Digitally signed by Anastasia
Pesce
Date: 2021.05.27 11:45:06 +02'00'



(A. Pesce, ESCC Executive Coordinator)

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Continuation of Boxes above:

[10]				
TASB-IND-RE-190003	1-0	15/02/2019	SRI connector – Qualification of aluminium wire bonding on nickel plating	
TASB-IND-RE-200049 (NCCS 2EECT001)	1-0	15/09/2020	Wire bonding on CNC83 capacitors glued with UVAPOX6484/QMI516IE - Qualification Test Report	
TASB-IND-RAP-200048	2-0	30/09/2020	Verification of qualification applied to the thick film substrate source of TAS-B after the Serma shopfloor move from 'Les Ulis' to 'Perigny' (La Rochelle)	

**APPLICATION FOR ESCC CAPABILITY APPROVAL (or its EXTENSION)****CAPABILITY DOMAIN: Low Frequency and Power Hybrid Line****Executive Member:** **ESA**

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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 Capability Approval or rationale for acceptability of noncompliance:
N/A

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Disposition:Application Approval: Yes ☒ No ☐

Action/Remarks:

Date:

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

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**APPLICATION FOR ESCC CAPABILITY APPROVAL****CAPABILITY DOMAIN: Low Frequency and Power Hybrid Line****Executive Member: ESA**

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NOTES ON THE COMPLETION OF THE APPLICATION FORM FOR ESCC CAPABILITY APPROVAL [or its EXTENSION, see BOX 12 below]

GENERAL	Whenever possible, all entries should be typed and in any case be suitable for legible reproduction by normal means.
ENTRIES	
Form heading	shall indicate: - the title of the capability domain or the technology as given in the Capability Abstract - the Executive Member ; - the entering date; - the serial number and the suffix of the form.
Box 1	shall provide under capability domain description the full name or a description statement of the capability domain – the number of the Capability Abstract document – the basic technology used for capability approval – the test structures specification numbers or identification numbers – the components which successfully passed component approval test and are proposed for qualification within the domain. N.B. The capability abstract shall be attached as an Appendix.
Box 2 and 3	Manufacturer's name and location of the plant(s) where the capability domain is situated.
Box 4	The ESCC basic specifications (including issue number and date) used during Process Capability Approval.
Box 5	Reference to test report(s) submitted in support of the application for capability approval and components proposed for qualification.
Box 6	Enter details to identify the PID that was applicable at the time of manufacturing of samples for capability approval testing.
Box 7	If the PID has been changed during or after capability approval testing, adequate details shall be provided together with the reasons for change. Major changes shall be clearly identified.
Box 8	The box serves to identify the current PID and the Executive Representative that has verified it together with the date of this verification.
Box 9	The box can be completed only after a physical visit to the plant to confirm that the practices, procedures, material, etc. used in manufacturing the components are as described in the PID. This audit shall be carried out in accordance with the requirements of ESCC Basic Specification No. 20200 and the results shall be formally recorded. The report number shall be referenced.
Box 10	Details entered shall be sufficient to evidenced that an evaluation programme according to ESCC Basic Specification No. 24300 has been performed and that the results thereof are summarised in the audit and test reports. If the evaluation programme has not been carried out according to established ESCC Specifications, the applicant Executive Member shall provide alternative data and declare the assessed degree of satisfactory compliance with the ESCC requirements. Reference shall be made to the reports on Destructive Physical Analysis (DPA), Failure Analysis reports as well as any Non Conformance (NCCS) issued during the Evaluation and/or capability approval testing.
Box 11	Enter the name of the Executive Member (i.e., CNES, DLR, ESTEC, etc.) and the signature and date of the responsible Executive Coordinator .
Box 12	To be used when there is a need to expand any of the boxes from 1 through 10. Identify the Box affected and reference Box 12 in the relevant Box. Box 12 can be broken into 12a, 12b, etc. if several boxes have to be expanded. In the case of Application for the Extension of Capability Approval, the Box 12 may be used to provide a summary of lots of component types (types, date codes, quantity) manufactured and tested within the capability domain. Refer to ESCC 24300, paragraph 9.4.3 for complete requirements.
Box 13	State noncompliance with reference to specification(s) and paragraph(s). To simplify reference in Box 14 each nonconformance shall be sequentially numbered. If relevant state 'None'.
Box 14	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 15	All Executive Manager recommendations on the application itself, special conditions or restrictions, modifications of the ESCC QPL entry, letters to the manufacturer, etc. shall be entered clearly in Box 15, signed by the representative for ESA , and dated.

Appendix to MOQ Form 349A: Capability Abstract (1 / 1) :

The Process Capability Approval (PCA) of the Hybrid Line of Thales Alenia Space Belgium (TAS-B), has been certified by ESA in accordance with the requirements of ESCC Basic specification No. 2566000. The associated PID includes TAS-B 's production flow (manufacturing, assembly and test operations) which has been approved for the supply of Hermetic Hybrid products destined to ESA space systems and other general space programs. TAS-B is certified as a Category1, Option 1 manufacturer, in accordance with the terms of ECSS-Q-ST-60-05C Rev.1.

Contact Information

Address	ESCC Chief Inspector
Thales Alenia Space Belgium Rue Chapelle Beausart 101 B-6032 Mont-sur-Marchienne (Charleroi) Belgium	Pascal Delporte Tel: +32 71 44 27 66

Process Capability Approval

Current PCA Certificate No.	Certified since:	Type Designation
349A	April 2018	Low frequency and Power Hybrid

Capability Abstract

The associated Process Identification Document (PID) is referenced 9100.0683 Issue 8.2

The PCA covers the TAS-Be activities in the field of manufacturing, testing, screening and Quality Assurance of Low-Frequency and Power Hermetic Hybrid technologies, produced to be embedded in modules assembled on TAS space equipment and sub-systems. TAS-B also delivers hybrids in direct to external customers (DC/DC converters,...).

According to the PID, the hermetic modules are designed and manufactured for the integration of function as "thick film" MCMs. These hybrids integrate several types of active and passive add-on parts, inside customized hermetic package : analogic and digital ICs, ASICs, bare chips (transistors & diodes), Capacitors, Resistors, Inductors and transformers, Thermistors, Thin-Film and Thick-Film circuits. Various types of wires are used for interconnection on dies and substrates or package (Al, Au, Cu). Various types of sealing are available to obtain a hermetic cavity under inert gas atmosphere. Depending of the application, the hermetic package is made of metal (Kovar or Alumium) with glass or ceramic feedthroughs. The use of ceramic HTCC package is also part of the PCA.

At the final step of production, hybrid modules are screened, according to the PID and to the generic procurement specification ECSS-Q-ST-60-05C Rev. 1.

The repair provision conditions (element replacement, re-bonding, de-lidding ...), as well as the criteria for lot rejection are also given in the PID, in accordance with ECSS-Q-ST-60-05C Rev. 1.

The procurement of passive and active components, materials and mechanical parts are assured according to internal procurement specifications and incoming instructions, as detailed in PID.

The associated internal tests namely include bondability/ shear tests , and user-LAT carried out per ECSS-Q-ST-60-05C Rev. 1.

In matter of LAT, TAS-B validates the hybrid lots produced according to "Option 1" of ECSS-Q-ST-60-05C Rev. 1.