MEMO

Date	7th of March 2019	**Ref**	ESA-TECMSP-MO-013161
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To	SMT Approved assembly lines, ESA PA Managers, ESA skills training schools, ESA recommended microsectioning facilities	**Copy**	

Subject: Procedure for approval of laboratories for microsectioning of electronic assemblies for ESA programmes

This document details the procedure to be followed by ESA for the selection and assessment of laboratories performing microsectioning of electronic assemblies in particular in the frame of soldering verifications per ECSS-Q-ST-70-07, ECSS-ST-Q-70-08 and ECSS-ST-Q-70-38.

The technical requirements applicable to the categories of laboratories identified in this memo are detailed in **ESA-TECMSP-MO-013162 (www.escies.org)**

1. Categories of laboratories

ESA memo, ESA-TECMSP-MO-013165 (www.escies.org), provides a list of laboratories recommended by ESA for performing microsectioning of electronic assemblies. The same memo states that other laboratories can be used provided that they have been accepted by ESA TEC-MSP.

Based on this, three categories of laboratories are defined:

Category A: ESA recommended laboratories: These are laboratories which are approved by ESA to perform activities for third parties and listed in a dedicated memo issued periodically by ESA TEC-MSP (ESA-TECMSP-MO-013165). The set of requirements applicable of these laboratories concern quality system, treatment of confidential data and information, training, technical requirements for microsectioning and reporting.

Category B: Industry in house laboratories: Industry owned laboratories operating only for industry internal use (no third-party activities). These laboratories are assessed by ESA in the frame of the audit of the assembly line. The requirements

applicable to these laboratories are relevant to: quality system, training, technical requirements for microsectioning and reporting.

Category C: Industry proposed laboratories: External laboratories proposed by industry in the frame of a verification programme and assessed for a "one off" use. ESA assessment of these laboratories is limited to verify the ability to perform the microsectioning and reporting in accordance the ESA technical requirements.

A laboratory can request candidature to become category A only if it is already category B or C.

A laboratory can request candidature as category B or C only in the frame of a verification plan that concerns an ESA programme, therefore shall be proposed by Industry.

2. Assessment Procedure

2.1. Category C

1) The laboratory shall be proposed by industry for a specific and identified microsectioning activity for an assembly verification programme.

2) The laboratory shall provide a summary of the experience in microsectioing of electronic assemblies, including time period of relevant activity, type of customer, number of customers, experience with ECSS standards.

3) The laboratory shall provide to ESA an example report for assessment, relevant to microsectioning of electronic assemblies. The report shall show examples of the typical type of devices expected in the verification programme for which the laboratory is candidate (i.e. chip resistors/capacitors, flat packs, LCCs, area array packages). The assembly shall have been conformal coated if the flight hardware is conformal coated.

4) ESA shall review the information and reports and provide comments to the laboratory. A teleconference shall be organised to discuss the comments and explain in detail to the laboratory ESA technical requirements. If the information provided is considered satisfactory, the assessment continues with step 5, otherwise actions are being proposed to ensure compliance

5) ESA shall provide relevant samples for microsectioning (ceramic resistors, capacitors, LCC , CQFP) to be microsectioned by the laboratory. Microsectioning and reporting shall be in compliance to ESA requirements. The microsectioning procedure shall also be provided for review.

6) The performance of the microsectioning work is assessed on provided documentation. Corrective actions may be defined where necessary.

7) Category C is awarded upon successful completion of all tasks.

In case of repeated use of the same laboratory, approval may be directly given based on previous experience without the need of a dedicated performance evaluation.

2.2. Category B

The same flow of activities defined for Category C is applicable. In addition, the laboratory shall be subject to an audit (in the frame of the visit of the assembly line) for the assessment of compliance to ESA requirements for quality, training, technical performance, and reporting.

2.3. Category A

A laboratory may apply to become category A only if it holds already a Category B or C approval, and performed microsections for a minimum of 5 verification test campaign for ESA projects.

Note: In the absence of Category B or C approval, the direct application to Category A is subject to ESA decision on a case by case basis.

1) With the candidature, the laboratory shall submit a dossier covering:

   a. Business plan

   b. Support letter by industry customers, National Space Agencies, or ESA delegates

   c. Description on how the Category A requirements are met

   d. The last 5 reports generated by the laboratory

2) The dossier shall be reviewed by ESA. In case of positive assessment, a date for auditing is agreed with the laboratory.

3) Upon successful closeout of the audit the laboratory is informed by letter, endorsed by the Materials and Processes Section (TEC-MSP), and will be listed as ESA recommended laboratory in ESA memos relevant to SMT (See **ESA-TECMSP-MO-013165)**.

The following table summarises the applicability of the different classes of requirements to each category.

3. Maintenance of approval

Category A: The list of laboratories is reviewed at least once per year. The assessment is based on the review of the reports generated by the laboratories for ESA programmes (therefore reviewed by ESA TEC-MSP). Follow-up audits are performed every four years.

	Quality requirements	Confidentiality requirements	Training Requirements	Technical Requirements	Reporting Requirements
Cat. A	Applicable	Applicable	Applicable	Applicable	Applicable
Cat. B	Applicable	n.a.	Applicable	Applicable	Applicable
Cat. C	n.a.	n.a.	n.a.	Applicable	Applicable

Category B: The laboratory is assessed in the frame of verification programmes of the assembly line of the company. Audits are performed together with the visit of the assembly line.

Category C: Approval is intended for each specific verification programme for which the laboratory is engaged by industry. Approval may be provided based on previous experience.

4. Suspension or withdrawal

A laboratory can be suspended from its category status at any time if it fails to meet the technical and reporting requirements. Re-approval of the category is possible after demonstration of compliance.

Major technical noncompliance or failure to comply to quality, training or confidentiality requirements may result in permanent loss of the approval status. Re-approval requires full submission and acceptance according to paragraph 2 of this memo.