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MATRIX / COMPLIANCE

Checklist for approval of PCB technology in MPCBs

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1 SCOPE AND PURPOSE

This checklist provides guidelines for the review and approval of printed circuit board (PCB) technology during Materials and Processes Control Boards (MPCB).

The checklist is intended for:

- a) the equipment supplier to self-assess compliance with the requirements from the applicable standards;
- b) the customer chain to identify if expert support is required to conclude on the review;
- c) the MPCB to use as a guide during the review process.

The checklists provides references to requirements and recommendations from ECSS-Q-ST-70-60, ECSS-Q-ST-70-10, ECSS-Q-ST-70-11 and common working practice for MPCB review.

2 ABBREVIATIONS

AD	Applicable Document
C	Compliant
ECSS	European Cooperation for Space Standardisation
ESA	European Space Agency
IPC	Association connecting electronics industry (originally: Institute for Printed Circuits)
MPCB	Materials and Processes Control Board
M&P	Materials and Processes
NA	Not applicable
NC	Non-compliant
PA	Product Assurance
PC	Partial compliant
PCB	Printed Circuit Board
QA	Quality Assurance
RD	Reference Document
RFA	Request for Approval
RFD	Request for Deviation
RFW	Request for Waiver
RFx	RFA/RFD/RFW

3 APPLICABLE DOCUMENTS

No	Reference	Document Title
AD01	ECSS-Q-ST-70	Space Product Assurance – Materials, mechanical parts and processes
AD02	ECSS-Q-ST-70-10C	Space Product Assurance – Qualification of PCBs
AD03	ECSS-Q-ST-70-11C	Space Product Assurance – Procurement of PCBs
AD04	ECSS-Q-ST-70-12C	Space Product Assurance – Design of PCBs
AD05	ECSS-Q-ST-70-38C rev 1 + corr 1	Space Product Assurance – High-reliability soldering for surface-mount and mixed technology
AD06	ECSS-Q-ST-70-60C corr 1	Space Product Assurance – Qualification and procurement of PCBs
AD07	QT-2014-148-SH	ESA memo - RFA justified by project qualification using group 6
AD08	ESA-TECMSP-MO-7424	ESA memo – Thermount 85NT PCBs
AD09	ESA-TECMSP-MO-11532	ESA memo - ECSS standards for PCB qualification and procurement

ESA memos are available on www.escies.org/pcb/.

4 ANNEXES

No	Annex Title
Annex 1	Checklist for review of PCB technology in MPCBs

5 INSTRUCTIONS FOR THE CHECKLIST

The checklist contains the following:

- 2 line items that are statements as a guideline to the MPCB process;
- 11 key line items Q1 to Q11 to be verified for MPCBs;
- 3 line items Q12 to Q14 that only apply for project qualification under RFA;
- 1 line item Q15 for equipment MRR, which is not applicable for MPCBs.

It is the intention of the 11 key line items to provide sufficient detail for a robust approval process of the PCB technology, while also maintaining a reasonably short review process.

It is the intention that Materials and Process (M&P) Engineers who are not expert in PCB technology can conduct this review with confidence, using this checklist, with the following outcome:

- Approval of qualified PCB technology;
- Identification of any non-qualified technology or any deviation to requirements;
- Preparation of the contents of RFAs.

Non-qualified technology, deviation to requirements and RFX are recommended to be reviewed, and eventually approved, by PCB experts, not only by M&P Engineers.

The checklist is build based on ECSS-Q-ST-70-60. The requirements and description from this standard are listed in columns B and C. The response from the equipment manufacturer can be provided in column E.

ECSS-Q-ST-70-60 is a new standard applicable to new projects. The standard supersedes ECSS-Q-ST-70-10 and ECSS-Q-ST-70-11, which are in use for current projects. Therefore, an additional column D is introduced that provides the applicability of the line item in the context of current projects. Thus, column C is to be used for new projects that have ECSS-Q-ST-70-60 applicable. Column D can be used for current projects that do not have ECSS-Q-ST-70-60 applicable. Further information on the change of applicable of standards is given in AD09 ESA-TECMSP-MO-11532.

The checklist is provided to the equipment supplier (contractor) in an editable excel format in Annex 1, to complete the self-assessment and to provide the response. The management of the organisation is responsible for the correctness and completeness of the response.

6 CHECKLIST

See Annex 1 for editable excel format of the checklist.