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## MATRIX / COMPLIANCE

# Comprehensive check list to ECSS-Q-ST-70-60 for PCB manufacturers

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| | **TEC-MSP** |
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# APPROVAL

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# CHANGE LOG

| Reason for change | Issue Nr. | Revision Number | Date |
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# CHANGE RECORD

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# DISTRIBUTION

| Name/Organisational Unit | |
|---|---|
| PCB/SMT WG | Airbus DS, P E Goutorbe |
| CNES, A Bonzi | KDA, S Lerdahl, T Lund |
| ACB, M Van de Slyeke | Leonardo, D Gallibariggio |
| Ciretec, P Audoux | OHB, A Hannes |
| Invotec, H Swarbrick | RUAG, M Soderholm |
| Systronic, X Mougenot | Sodern, F Laporte; |
| TESAT, T Bartscherer | TAS, J-M Guiraud, L Sollecchia |

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# 1 SCOPE AND PURPOSE

This checklist provides guidelines for the verification of the qualification and procurement of Printed Circuit Boards (PCB).

This checklist is expected to contribute to the success of the audit by ensuring a consistent assessment approach, and that both audit scope and objectives are being followed.

The checklist is intended for:
  a) the audited organisation to self-assess compliance with the specified requirements;
  b) the auditor(s) performing the assessment to identify the resources required by the applicable documents;
  c) both the auditor(s) and the audited organisation to use as a guide during the assessment process.

A previous checklist ESA-TECMSP-MX-11528 was issued titled "Short check list to ECSS-Q-ST-70-60 for PCB manufacturers", which only included a limited set of high level requirements to verify the differences between ECSS-Q-ST-70-10 and -11 versus the new ECSS-Q-ST-70-60.

The present comprehensive checklist provides detailed references to most of the requirements and recommendations from ECSS-Q-ST-70-60.

This checklist is not a script for the audit, and it shall not be followed blindly during the audit execution. The auditor(s) may often collect and evaluate audit evidence by following audit trails which are not identified in this checklist.

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## 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 |
| MRR | Manufacturing Readiness Review |
| 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    DOCUMENTS

| No | Reference | Document Title |
|---|---|---|
| AD01 | ECSS-Q-ST-70-60C | Space Product Assurance – Qualification and procurement of PCBs |

| No | Reference | Document Title |
|---|---|---|
| RD01 | ESA-TECMSP-MX-11528 | Short check list to ECSS-Q-ST-70-60 for PCB manufacturers |
| RD02 | ESA-TECMSP-MX-011320 | Checklist for ENIG, ENEPIG, ENIPIG surface finish on PCBs |
| RD03 | ESA-TECMSP-MX-012940 | Checklist for PCB review in MPCBs |
| RD04 | ESA-TECMSP-MO-11532 | ECSS standards for PCB qualification and procurement |
| RD05 | ESA-TECMSP-MX-014192 | Checklist for MRR for PCB manufacturers and procurement authority |
| RD06 | QT-2015-421-SH | Audit Check List ECSS-Q-ST-70-10/11/12 |

| No | Document Title |
|---|---|
| Annex 1 | ESA-TECMSP-MX-11559 compliance matrix to ECSS-Q-ST-70-60 (excel file) |

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# 4   INSTRUCTIONS FOR COMPLETING THE CHECKLIST

The audit checklist is provided to the audited organisation 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. The auditor(s) reserves the right to use the information provided by the audited organisation to support the audit execution, and to complement the audit checklist with their assessment where relevant.

The checklist contains 270 line items to be verified. Requirements are indicated by including the word "shall". Other line items are recommendations or modified requirements for which compliance is requested to be evaluated as part of this checklist. This checklist does not contain verification of requirements that are specific to MRR (Manufacturing Readiness Review of PCBs), for which a separate checklist will be generated as per RD05. This helps keeping the present checklist of a reasonable size.

Clause 5.9 from ECSS-Q-ST-70-60 specifies the following requirements to this checklist and its use:

5.9d.   The qualification authority shall submit to the PCB manufacturer an audit checklist that verifies the requirements from ECSS-Q-ST-70-60 and its normative references one month prior to the date of the audit.

5.9e.   The PCB manufacturer shall provide the response to the audit checklist to the qualification authority at least one week prior to the date of the audit.

5.9f.   The response from the PCB manufacturer in the audit checklist shall include the following:
1.      compliance level as follows:
    (a)   "compliant" or
    (b)   "non-compliant" or
    (c)   "partial compliant" or
    (d)   "not applicable",
2.      a comment explaining any non-compliance, partial compliance or non-applicability,
3.      references to work instructions that specify the verified requirement.

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