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MEMO

Date	21/11/2018	Ref	ESA-TECMSP-MO-011532
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To	PCB/SMT WG, ESA projects, PAM		

Subject: ECSS standards for PCB qualification and procurement

1 SCOPE

ECSS-Q-ST-70-60C “Qualification and procurement of PCBs” has been issued in Jun 2018. This standard merges and updates significantly the ECSS-Q-ST-70-10C “qualification of PCBs” and ECSS-Q-ST-70-11C “procurement of PCBs”.

This memo has been reviewed by the PCB/SMT WG. It describes the impact of this change on:

- qualification of PCB manufacturers
- procurement of PCBs
- quality assurance in ESA projects.

2 CHANGE OF APPLICABLE DOCUMENTS

Old situation:

- ECSS-Q-ST-70-10 Qualification of PCBs (issued 2001)
- ECSS-Q-ST-70-11 Procurement of PCBs (issued 2001)
- ECSS-Q-ST-70-12 Design of PCBs (issued 2014)

New situation:

- ECSS-Q-ST-70-60 Qualification and procurement of PCBs (issued Jun 2018)
- ECSS-Q-ST-70-12 Design of PCBs (issued 2014)

Various ESA memos from ESCIES.org/pcb/ have been implemented in ECSS-Q-ST-70-60. This web portal still lists the historic memos with an indication by which chapter from ECSS-Q-ST-70-60 they have been superseded.



3 QUALIFICATION OF PCB MANUFACTURERS

The qualification of PCB manufacturers by ESA as qualification authority occurs with ECSS-Q-ST-70-60 as applicable standard from Jun 2018 onwards. This includes new qualification, delta qualification, project qualification and qualification renewal.

To evaluate the implementation of new requirements from ECSS-Q-ST-70-60, ESA issued ESA-TECMSP-MX-11528 “Short check list to ECSS-Q-ST-70-60 for PCB manufacturers”.

Webportal ECSIES.org/pcb/ shows the qualification status of PCB manufacturers and technology. This overview has been updated as per the requirements from ECSS-Q-ST-70-60.

PCB manufacturers that show the status “not qualified” for a technology, as a result of nonconformances observed during qualification renewal, shall not release PCBs in (full) compliance with ECSS. In case the procurement authority wishes to proceed with the release of PCBs by the PCB manufacturer, the procurement authority shall submit an RFD to its customer chain. This RFD shall include specific tests and inspections that mitigate the nonconformance observed. Details of the nonconformances can be provided by the PCB manufacturer to the procurement authority. This approach is unchanged since the issue of the new ECSS.

4 PROCUREMENT OF PCBS

For ongoing projects, the procurement authority is recommended to procure PCBs as per ECSS-Q-ST-70-60, using it as procurement specification as described in requirement 6.2.2a from that standard.

Procurement to ECSS-Q-ST-70-11 can still take place. However, the PCB manufacturer is not authorized to state compliance to ECSS-Q-ST-70-11 since no qualification authority is assessing any longer compliance to this outdated standard. Instead, the PCB manufacturer shall declare compliance to ECSS-Q-ST-70-60 on its CoC. This is considered equivalent to ECSS-Q-ST-70-11, covering all its requirements and more.

For future projects, the procurement authority will be required to procure PCBs as per ECSS-Q-ST-70-60, as described in §5.1 of this memo.

5 QA IN ESA PROJECTS

5.1 PA requirements

Ongoing ESA projects have ECSS-Q-ST-70-10 and ECSS-Q-ST-70-11 applicable. Instead, it is recommended to use ECSS-Q-ST-70-60 whenever the industrial chain agrees to do so. Should the procurement authority insist to procure PCBs as per ECSS-Q-ST-70-11, then this is still possible as described in §4 of this memo.

Future ESA projects have ECSS-Q-ST-70-60 applicable, as well as ECSS-Q-ST-70-12.



5.2 Project qualification

For the project qualification under RFA it is up to the customer chain to define the tests, inspections and acceptance criteria to approve the projects qualification. Previously, ESA memo QT/2014/148/SH was used to specify the contents of the RFA and the project qualification test plan and reporting. This memo has been superseded by clause 7.7 of ECSS-Q-ST-70-60, which will be used from now on.

Note that clause 7.7 also specifies an approach for PCB procurement using IPC specifications.

The specific case of project qualification of Thermount PCBs is outlined in ESA-TECMSP-MO-7424, which is unchanged as a result of the new ECSS-Q-ST-70-60.

5.3 MPCB

The review of PCBs in DML and MPCBs shall occur as specified in clause 7.7 of ECSS-ST-70-60 for ESA projects that have this standard applicable. This has not been previously specified.

5.4 Flexible PCBs

Flexible PCBs have in some cases not been treated as per ECSS-Q-ST-70-10 in previous projects. For future projects, clause 5.3 of ECSS-Q-ST-70-60 specifies the approach to be used for the (project) qualification of flexible PCBs.