

**Systronic**  
**att. Mr X Mougnot**  
**6, avenue de l' atlantique**  
**Z.A. Courtaboeuf**  
**91955 Les Ulis Cedex**  
**France**

Our ref.                      ESA-TECMSP-LE-2023-000529

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Noordwijk, 17/02/2023

VISA: T Rohr

**Subject: Qualification renewal of Epoxy PCBs from Systronic**

Dear Mr Mougnot,

Systronic submitted HTg epoxy rigid and rigid-flex PCBs to ESA for qualification renewal in August 2022. The evaluation is reported in ESA-TECMSP-TR-2022-002824 and ESA-TECMSP-TR-2022-002824.

Hole wall pull away was observed after solder bath floating test on the rigid-flex PCB. In addition, it seemed that systematic inclusions were present in laminate and prepreg. ESA requested corrective actions in letter ESA-TECMSP-LE-003267. Systronic provided Technical Analysis Report SY 1105-22. This provides confirmation from the base material supplier that the inclusions are intrinsic, non-conductive fillers of the resin system. Systronic includes the observations in PID 1 and 4 for future reference. The hole wall pull away is assessed to be within ECSS limits on various other samples and a function of thermal stress. This is an intrinsic property of the epoxy resin system. The risk associated with multiple rework is highlighted in the MRR. The corrective actions defined by Systronic are considered adequate and those have been reviewed and agreed by ESA, CNES and Systronic's main customers.

Systronic is considered qualified in accordance with ECSS-Q-ST-70-60C for the manufacture of Printed Circuit Boards as follows:

- Rigid non-sequential FR4 epoxy PCBs in accordance with PID 1 v13 until 1 March 2024
- Rigid-flex non-sequential FR4 epoxy PCBs in accordance with PID 4 v13 until 1 March 2024

Best regards,

Jussi Hokka  
Materials & Processes Section (TEC-MSP)