

## 5.2 **NON-HERMETIC MODULES LINES**

### 5.2.1 **3D plus**

The Process Capability Approval (PCA) of the Production and Test Line of 3D PLUS in Buc, France, has been certified by ESA in accordance with the requirements of ESCC Basic specification No. 2566001.

The associated PID No. 3300-0546 issue 12 includes 3D PLUS' manufacturing, assembly and test operations which have been approved for the supply of non-hermetic modules for use in ESA space systems.

#### 5.2.1.1 **Contact Information**

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#### 5.2.1.2 **Process Capability Approval**

Certificate No.	Certified since:	Type Designation
351A	Nov. 2017	3D Stacking Technology Modules

#### 5.2.1.3 **Capability Abstract**

The associated Process Identification Document (PID) is Ref. 3300-0546-12 (PID Rev.12).

Since the Rev.11 of the PID, ESCC N°2566001 standard is the reference for the definition and evolution of the Process Capability Approval (PCA). This PCA covers the 3D PLUS Buc activities on manufacturing, tuning, testing, inspection and Quality Assurance of 3D stacked products used for 3D PLUS catalogue and custom products.

According to the PID, the 3D PLUS modules are manufactured by stacking several layers of active and passive components. Two manufacturing flows are defined as follows:

- Flow 1 for the stacking of memories with TSOP packages.
- Flow 2 for the stacking of thin PCBs (Flex) populated with EEE components. These components are assembled by soldering when used in packages or by wire bonding when used in dice form.

Flow 2 allows a large diversity of packages (TSOP, PQFP, FBGA...) enabling the design and manufacturing of complex products.

Then, modules are screened, according to the PID, and to the generic procurement specification ECSS-Q-ST-60-05C.

The repair provision conditions as well as the criteria for lot rejection are also given in the PID.

The procurement of passive and active components, materials and mechanical parts are performed following internal procurement specifications and incoming instructions, as detailed in PID. Commercial EEE Active components

Evaluation is in conformance with ECSS-Q-ST-60-13C standard.

For Module Lot Acceptance Test (Module LAT), 3D PLUS follows the ECSS-Q-ST-60-05C adapted to non-hermetic and cavity free modules.