

## 5.5 SAFRAN ELECTRONICS & DEFENSE

The Process Capability Approval (PCA) of the Hybrid Line of Safran Electronics & Defense in Valence, France, has been certified by ESA in accordance with the requirements of ESCC Basic specification No. [2566000](#).

The associated PID includes Safran Electronics & Defense's manufacturing, assembly and test operations which have been approved for the supply of Hermetic Hybrid products for use in ESA space systems as a Category1, Option 1 Manufacturer, in accordance with ECSS-Q-ST-60-05C Rev.1

### 5.5.1 Contact Information

Address	ESCC Chief Inspector
95 route de Montélier	Mr. Stephane BLACHE
BP234	stephane.blache@safrangroup.com
26002 VALENCE	
FRANCE	

### 5.5.2 Process Capability Approval

Current PCA Certificate No.	Certified since:	Type Designation
346	Dec. 2016	Thick Film Hermetic Hybrid Integrated Circuits and HTCC Hermetic Hybrid Integrated Circuits

### 5.5.3 Capability Abstract

SAFRAN ELECTRONICS & DEFENSE's hybrid manufacturing line capabilities are defined within the associated Process Identification Document (PID) AQA 511 rev Z.

This PID describes hybrid assembly, packaging, production screening, test and quality assurance processes for Medium and Low power Hybrids Circuits using multilayer Thick film and HTCC (High Temperature Cofired Ceramics) technology.

Hybrids are used in equipment like power supplies, Video treatment, low noise amplifiers, data link electronics for telecom or scientific systems...

The hybrids are screened in house according to the PID. Regarding the Lot Acceptance Test SAFRAN ELECTRONICS & DEFENSE is compliant to Option 1 as default, but under customer agreement also the Option 2 can be applied (TRB, SPC, SEC).

According to the PID, the hybrids circuits are manufactured by encapsulation, of several types of active and passive components reported inside customized hermetic package : ASICs and digital/analog ICs, Transistors, Diodes, Capacitors, Resistors networks, Optocouplers, Magnetic devices, Thermistors ...

The choice, definition and procurement of active and passive chips, material and mechanical parts, the incoming inspection and the User-LAT test are performed according to custom specifications or PID procedures.

In-house process capabilities:

- Multilayer thick film printing
- Static and dynamic thick film resistors trimming.
- Single or double-sided hybrids
- Bare dices and SMT components: automatic pick-and-place assembly
- Automatic Wire bonding.
- Seam sealing
- Mix technologies on same hybrid circuit (HTCC+Thick film+Reflow soldering)
- Internal Expertise Laboratory : Destructive Physical Analysis (DPA), Elements characterizations, Failure analysis

## 5.6 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 11 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.

### 5.6.1 Contact Information

Address	ESCC Chief Inspector
408, rue Hélène Boucher – Z.I. 78532 BUC Cedex France	Mr. Loïc LE ROY  loic.le.roy@3d-plus.com

### 5.6.2 Process Capability Approval

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