5.1.7 THALES ALENIA SPACE, ITALY

The Process Capability Approval (PCA) of the Hybrid Line of Thales Alenia Space (TAS), L'Aquila, Italy, has been certified by ESA in accordance with the requirements of ESCC Basic specification No. 2566000.

The associated PID includes TAS' 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 2 Manufacturer, in accordance with ECSS-Q-ST-60-05C Rev.1

5.1.7.1 Contact Information

Address	ESCC Chief Inspector
Thales Alenia Space Zona Industriale Frazione di Pile (snc), 67100 L'Aquila Italy	Mr. F. Vasarelli Tel. +39 0862 707 313

5.1.7.2 Process Capability Approval

Certificate No.	Certified since:	Type Designation
343A	October 2016	Hybrid Integrated Circuits (MHIC) product line and LTCC Integral Substrate Package (ISP) Hybrid Integrated Circuits

5.1.7.3 Capability Abstract

The PID PCP-14-60-013 Iss.F covers the TAS-I L'Aquila activities on manufacturing, tuning, testing, inspection and quality assurance of Microwave Hybrid Integrated Circuits (MHIC's) and LTCC Integral Substrate Package (I.S.P.) Hybrid Integrated Circuits, installed on space Units Hardware for TAS Equipment, Sub-System and Antennas.

The MHICs manufactured in L'Aquila have customized packages and they can be made by means different technologies, according specific need and performances, as mechanical housing with brazed glass or ceramic feed-through or connectors or as Integral Substrate Package (ISP) based on Low Temperature Ceramic Cofired (LTCC) or High Temperature Ceramic Cofired (HTCC).

The MHICs housing can be populated by Thin Film Al2O3 or LTCC or Thick Film on multilayer Al2O3 (Ref. proper PID 14-40-001) ceramic substrates, manufactured, on a dedicated line in TAS-I L'Aquila as reported in the PID, glued or brazed on the MHIC housing.

The MHICs are populated with a lot of active and passive components selected to meet specific functions and performances : MMICs , ASICs, SRAMs, Digital Analog and RF ICs, Transistors, Diodes, Capacitors, Resistors, Inductors, Circulators and Thermistors. These components are mounted on the substrates by dispensing of different epoxy adhesive or by brazing process.

The interconnections among parts and substrates are made by wiring or ribbons in different materials and size and using different techniques.

The thermal dissipation for the most critical devices is managed by the use of heat spreader glued with high thermal conductive adhesive or brazed onto metal carrier.

Hermetic cavity is generated by lid sealing process, Seam or Laser Welding techniques, in inert gas atmosphere.

The procurement of active and passive chips, material and mechanical parts , the incoming inspection and the User-LAT test are performed according to dedicated procurement specifications or procedures reported in the PID and in conformance to ECSS-Q-ST-60-05C.

The MHICs are screened in house according to the PID and in conformance to ECSS-Q-ST-60-05C, as well the rework provisions and the Lot Acceptance Criteria. Regarding the MHIC Lot Acceptance Test TAS-I L'Aquila is compliant to Option 2 as default, but under customer agreement also the Option 1 can be applied. In addition for the Option 2 TAS-I L'Aquila defined a Technology Review Board (TRB) which supervises the Statistical Process Control (SPC) on manufacturing line processes, and implemented Standard Evaluation Circuit (SEC) policy for LAT acceptance. The SECs, coming from different Flight Model and taken from the manufacturing line, are able to cover the whole MHIC Technology Domain, and they are submitted to Destructive Physical Analysis (DPA) according to PID and ECSS-Q-ST-60-05C.