5.3 ASSEMBLY AND TEST HOUSES (ATH)

5.3.1 ALTER TECHNOLOGY TÜV NORD, UK

The Process Capability Approval (PCA) of ATH services from Alter Technology TÜV Nord in Livingstone, Scotland, UK, has been certified by ESA in accordance with the requirements of ESCC Basic specification No. 2567000

5.3.1.1 Contact Information

Address	ESCC Chief Inspector
Alter Technology TÜV Nord Ltd 5 Bain Square Livingston EH54 7DQ, Scotland, UK	Mr. Szymon Bednarski szymon.bednarski@uk.altertechnology.com

5.3.1.2 Process Capability Approval

Certificate No.	Certified since:	Type Designation
390	August 2024	Hermetically Encapsulated Integrated Circuits: Epoxy attached, wire bonded SiGe IC in hermetic LGA/BGA ceramic package

5.3.1.1 Capability Abstract ATH service for hermetic IC components

The Process Capability Approval (PCA) covers the Manufacturing Line of Alter Technology TUV Nord UK Ltd (ATN UK) within its activities on manufacturing, inspection, and Quality Assurance of integrated circuits modules adhesive attached in hermetically sealed package, connected by wiring with variation of materials and sizes using different techniques; and defined within the associated PCA Process Identification Document (PIO) 572-513-01.

The modules are manufactured in UK facility of Alter Technology Group (ATG) which have capability of designing of customized packages that can be made by means of different technologies, in according to specific needs and performances, as mechanical housing metal-based or ceramic-based with brazed glass or ceramic feedthrough, or connectors, or as Integral Substrate Package (ISP) based on Low Temperature Ceramic Cofired (LTCC) or High Temperature Ceramic Cofired (HTCC)

The carriers are populated with a variation of components selected to meet specific functions and performances: die in technology specified within Capability Domain Boundary. These components are mounted on the substrates by application of epoxy adhesive.

The interconnections among parts and substrates are made by wiring of various sizes and using different bonding techniques.

Hermetic cavity is achieved by solder sealed lid, in inert gas atmosphere.

The procurement of components, material and mechanical parts, the incoming inspection and in-process validations and inspection is performed in according to dedicated procurement specifications and procedures reported in the PID. Components are submitted to Destructive Physical Analysis (DPA) and controlled by Statistical Process Control (SPC) of manufacturing line processes.

While Screening and Lot Acceptance Testing of the modules are not covered under the certification scope, they can be conducted at Alter Technology TUV Nord (ATN) in Spain, in accordance with the PID.

Details of the Process Capability Domain:

Die Type

Die Technology	Wafer Foundry	Die size	Die back side	Pad Plating
SiGe BiCMOS 0.35µm	AMS S35D4H5	1mm - 1.7mm	Si	Al 3um

Package type

Package Type	Package Description	Terminals
Ceramic Flat or Cavity	Kyocera A473, 6x6mm, Thickness up to 2mm, metallization of Molybdenum, vias of Tungsten, Ni/Au plating	LGA/BGA

Lid type

Lid Type	Lid material	Seal method
Flat or Concave	Kovar; Ni/Au	Solder seal

Assembly details

Attach medium	Interconnections	Encapsulation
Electrically conductive epoxy	Au Ball bond - 23µm or 25µm	Reflow in vacuum furnace