What is behind our Qualification Tests?

Tests performed during manufacturing phase



WAFER LOT ACCEPTANCE

Acceptance of manufactured wafer before assembly.



INTERNAL VISUAL INSPECTION

Non-destructive method of assuring a minimum level of reliability by segregating or removing devices with obvious defects from a population.



PIND TEST

To detect the presence of free particles inside a cavity that could potentially generate a short-circuit.



CONSTANT ACCELERATION

An accelerated test designed to indicate types of structural and mechanical weaknesses not necessarily detected in shock and vibration tests.



TEMPERATURE CYCLING

Identifying failures due to die or package cracking, bond wire defects and any interconnect related failures.



XRAY INSPECTION

Non destructive method for detecting conductive materials inside the package, or sealing issues.



C-SAM

Non-destructive method for detecting voids, cracks, and delaminations.



PRE-AMBIENT ELECTRICAL

Verification of electrical performances of parts versus specifications at ambiant temperature.



EXTREME TEMP. **ELECTRICAL**

Verification of electrical performances of parts versus specifications at extreme temperatures.



DYNAMIC BURN-IN

Dynamic accelerating temperature and/or voltage stresses to reduce infant mortality.



STATIC BURN-IN

Static accelerating temperature stress to reduce infant mortality and verifying low contamination of dies surfaces.



DRIFT CALCULATION

Verifiying that drift of electrical performances after burn-in remains within the specification and segregating abnormal parts.



Permits the lot to be accepted up to a maximum observed percent of defective parts after burn-in.



SCAN THE QR-CODE TO DOWNLOAD **OUR SPACE FLOW** COMPARISON CHART POSTER.



FINE & GROSS **LEAKS TEST**

Guaranteeing the hermiticity of parts by removing non compliant parts.



PHYSICAL DIMENSION CONTROL

Guaranteeing physical dimensional compliance of parts within limits of specification.



EXTERNAL VISUAL

Examination of external surfaces, construction, marking and manufacture of finished parts in order to segregate or remove parts with obvious defects from a population.



What is behind our Qualification Tests?

Tests performed during qualification phase

For more information, please link to the "Quality Requirements" in the Space Flow Comparison Chart Poster.

Tests	Te2v Quality Level	Method / Condition	Purpose of the test
Lot Verification Testing (ESCC9000)		LVT report delivered with parts	
LVT1 - Environmental	NB1	ESCC 9000 - Chart F4	Application of thermal cycle as seen from the parts to validate assembly and eliminate abnormal manufacturing batches.
LVT1 - Mechanical		ESCC 9000 - Chart F4	Simulate the mechanical stresses associated with the satellite launch to validate assembly and eliminate abnormal manufacturing batches.
LVT2 - Endurance		ESCC 9000 - Chart F4	Verifying the wear out mortality within the expected lifetime of parts.
LVT3 - Capability		ESCC 9000 - Chart F4	Verification of assembly reproductilibty, conformance and eliminate abnormal manufacturing batches.
Quality Conformance Insp. (MIL-PRF-38535)		QCI report delivered with parts	
Group A - Electrical test	QML-Q QML-V QML-Y	MIL-PRF-38535 / delivered parts	Verification of electrical performances of parts versus specifications.
Group B – Assembly Capability		MIL-PRF-38535	Verification of assembly reproductibility, conformance and eliminate abnormal manufacturing batches.
Group C - Steady-state life test		MIL-PRF-38535	Verifying the wear out mortality within the expected lifetime of parts.
Group D - Thermal & Mechanical		MIL-PRF-38535	Application of thermal cycling and simulation of mechanical stresses as seen from parts to validate assembly and eliminate abnormal manufacturing batches.
Group E – RHA		MIL-PRF-38535	Verification of electrical performances under radiation.
Wafer acceptance Report		QM plan	Acceptance of manufactured wafer before assembly.
Outgassing test		ASTM E595	Guarantee low or very low condensated volatile materials under vacuum .
Preconditioning / CSAM		J-STD-020 / MIL-STD-883 TM 2030	Verification of sensitivity to moisture during reflow phases.
Qualification Lot (PEM-INST-001)		Qualification report delivered with parts	
Radiation Verification Tests	«-Nx» NASA Level	TID and SEE - ESCC 22900 / MIL STD 883 1019 /ESCC 25100	Verification of electrical performances under radiation.
Preconditioning		Moisture soak / Reflow simulation	Verification of sensitivity to moisture during reflow phases.
Subgroup 1a - Life testing		MIL-STD-883 TM1005 / D / 125°C	Verifying the wear out mortality within the expected lifetime of parts.
Subgroup 1b - Temp cycling		MIL-STD-883 TM 1010 / B + DPA	Application of thermal cycle as seen from the parts to validate assembly and eliminate abnormal manufacturing batches.
- DPA/FA		PEM-INST-001 and internal standards	Inspect and verify the internal design, materials, construction and workmanship of parts.
Subgroup 2 - Biased HAST		JESD22-A110 / 96 hours / +130°C / 85% RH	Ensure insulation deteriorations and corrosion driven by moisture (accelerated by adding voltage stress).
- Unbiased HAST		JESD22-A118 / A / 96 hours / +130°C / 85% RH	Ensure insulation deteriorations and corrosion driven by moisture.
Lot Acceptance Test (ECSS-Q-ST-60-13)		LAT report delivered with parts	
Construction analysis	«-Ex» ECSS Class	ECSS-Q-ST-60-13	Inspect and verify the internal design, materials, construction and workmanship of parts.
Outgassing test		ECSS-Q-ST-70-02	Guarantee low or very low condensated volatile materials under vacuum.
Precond + (Biased HAST or THB)		JESD22-A110 96H / +130°C / 85%RH or JESD22-A101	Ensure low insulation deteriorations and corrosion driven by moisture (accelerated by adding voltage stress) and low sensitivity to moisture during reflow phases.
Precond + Temp Cycling + CSAM		MIL-STD-883 TM 1010 / B / 100cy / -55°C to 125°C	Application of thermal cycle as seen from the parts to validate assembly and eliminate abnormal manufacturing batches.
HTOL		MIL-STD-883 TM 1005 / D / 125°C / per diffusion lot	Verifying the wear out mortality within the expected lifetime of parts.
Radiation Verification Tests		TID (ESCC 22900 / MIL STD 883 1019) and SEE (ESCC 25100)	Verification of electrical performances under radiation.
Lot Trace Code validation		No validation report delivered with parts	
Radiation Verification Tests	Teledyne -X1	TID (ESCC 22900 / MIL STD 883 1019) and SEE (ESCC 25100)	Verification of electrical performances under radiation.