



## Company Profile

Feb. 2023



# Company Overview



<b>Co. Name</b>	APACT Co., Ltd	2022.11	Turn-Key Biz(Merged ATSemi Assy house)
<b>Est.</b>	Est. Jun 2007 (Merged with ATS PKG in Nov. '22)	2022.09	System IC Test Service
<b>CEO</b>	Lee Sungdong		
<b>Biz Loc.</b>	<ul style="list-style-type: none"> <li>Anseong : Iljuk, Anseong, Gyeonggi</li> <li>Eumseong : Maengdong, Eumseong, Chungcheongbuk</li> <li>Jincheon : Jincheon, Chungcheongbuk</li> <li>Sales office : Pangyo, Seongnam, Gyeonggi</li> </ul>	2021.06	Sales office for System IC (Pangyo, Seongnam)
<b>Area</b>	<ul style="list-style-type: none"> <li>Anseong : Land area 19,173m<sup>2</sup>, Floor area 11,240m<sup>2</sup></li> <li>Eumseong : Land area 14,876m<sup>2</sup>, Floor area 214,876m<sup>2</sup></li> <li>Jincheon : Land area 37,014m<sup>2</sup>, Floor area 23,471m<sup>2</sup></li> </ul>	2020.06	Est. Eumseong Campus
<b>Employee</b>	650 (380 for PKG, 270 for TEST)	2014.12	Listed on KOSDAQ
<b>QC</b>	IATF16949, ISO9001, ISO14001, ISO45001	2012.06	Est. Head Factory(Anseong Campus)
<b>Biz Field</b>	Assembly, Test	2008.08	DRAM Memory Test Service
<b>PKG Type</b>	Memory(MCP, eMMC, PoP, BOC, TSOP), FBGA, QFP, SiP, QFN	2007.11	NAND Flash Memory Test Service
<b>Capital</b>	USD \$160 million (End of '22)	2007.06	Establishment of HISEM Co., Ltd.

Business convenience : It is one hour away

### Sales Office

Pangyo, Bundang-gu,  
Seongnam-si (in 2021)

### Jincheon Campus:

PKG (in 1999)  
Cleanroom (22,416m<sup>2</sup>)



### Anseong Campus (Headquarter)

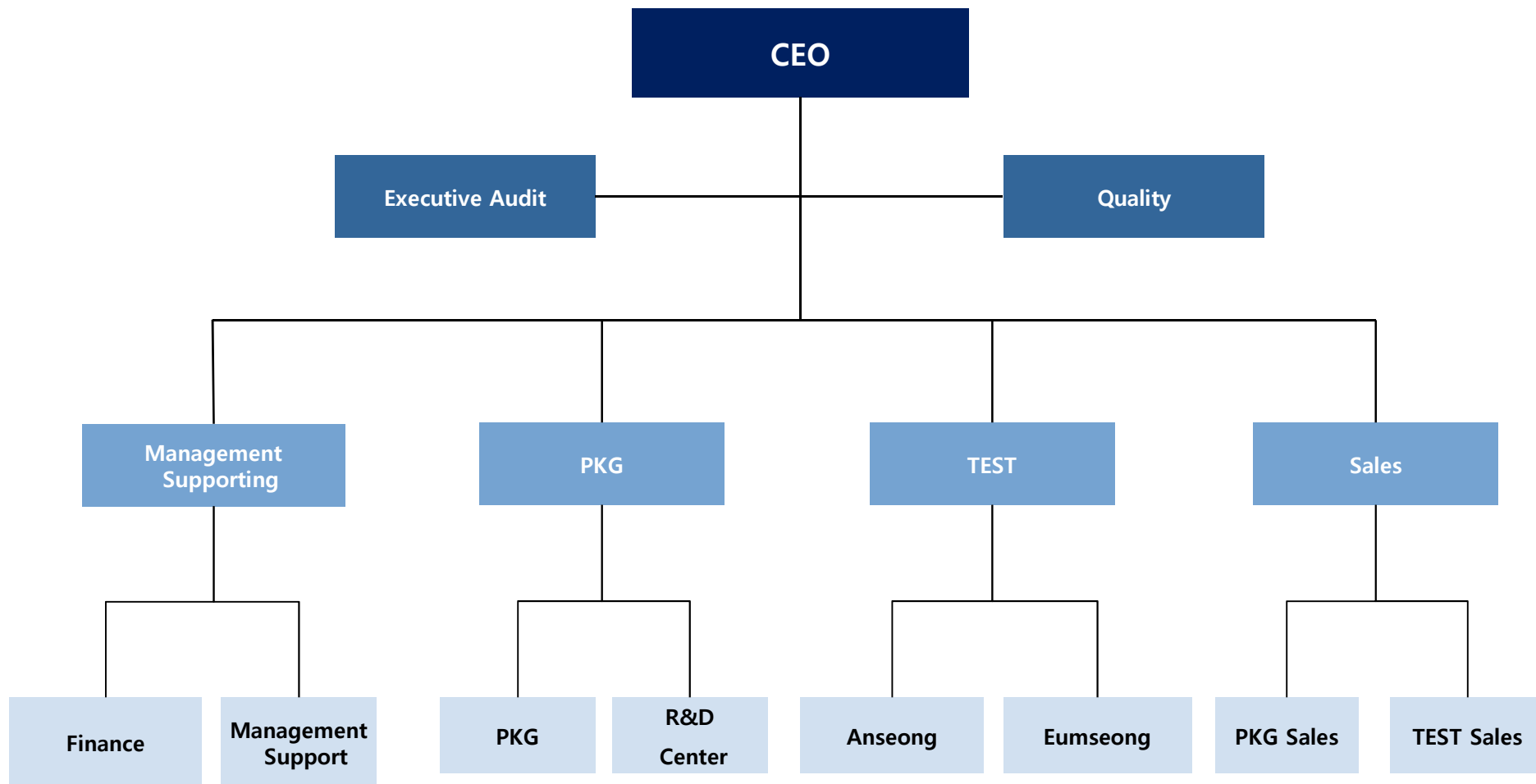
TEST (in 2012)  
Cleanroom (5,950m<sup>2</sup>)



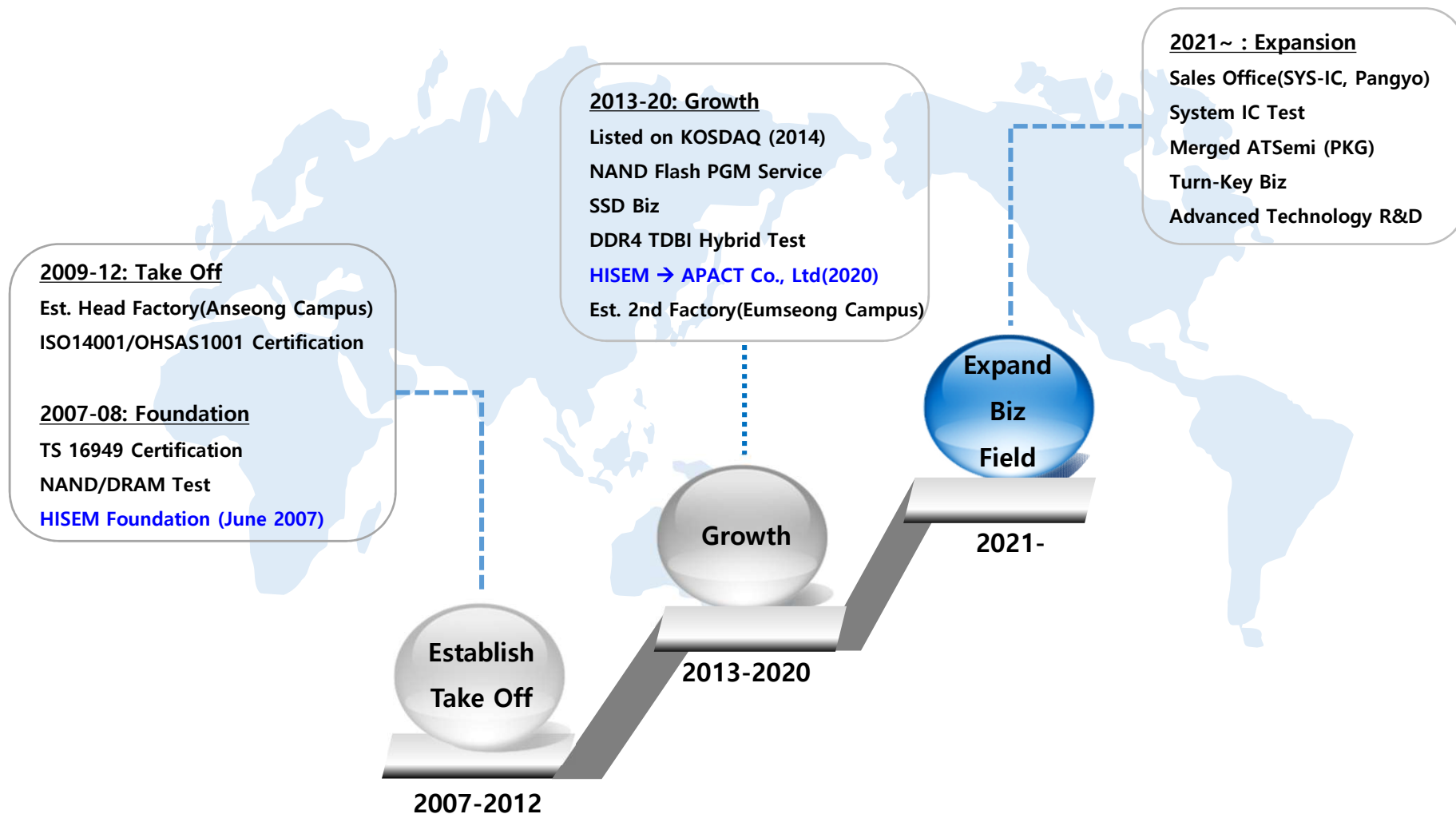
### Eumseong Campus

PKG & TEST (in 2020)  
Cleanroom(5,785 + 4,793m<sup>2</sup>)





## ■ Growth Milestone





■ Turn-Key Service : Assembly and Test



## Quality Management, Environmental Management, Ethical Management

PKG&TEST : Blue

PKG: White



Certificate  
Green Partner  
**SONY**

Scope	Certificate	Sponsor	Certification
QMS	. IATF16949 . ISO9001	. NQA . IIC	
EMS/RoHS	. ISO14001	. IIC	
Safety/Health	. ISO45001	. IIC	
Eco Partner (EMS/RoHS)	. Samsung	. Samsung	
Green Partner (EMS/RoHS)	. Sony	. Sony	

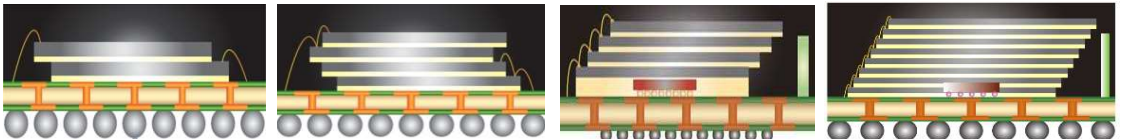
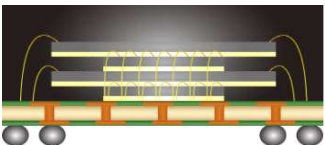
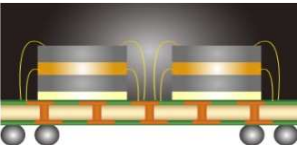
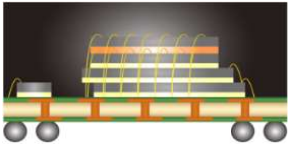
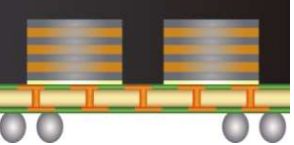
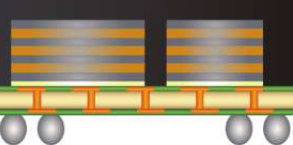
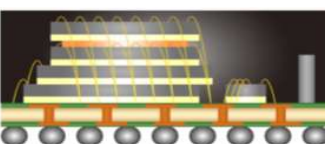
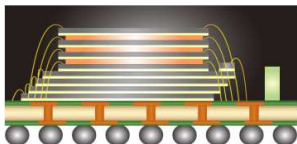
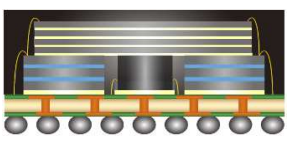
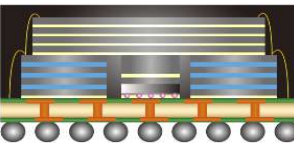
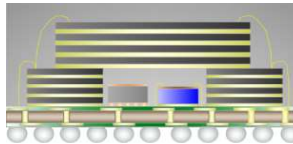
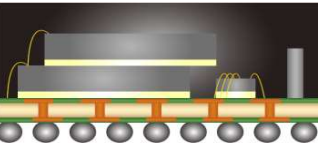
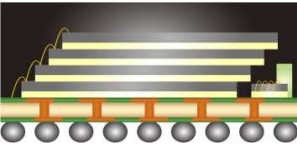
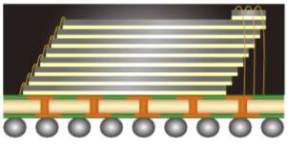
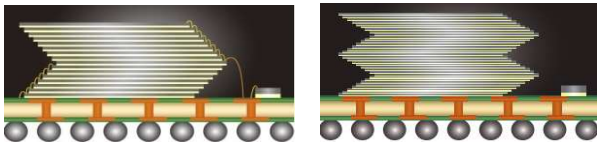

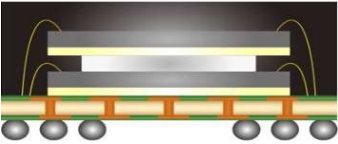
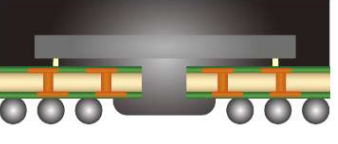
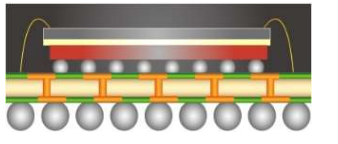




## PKG Division



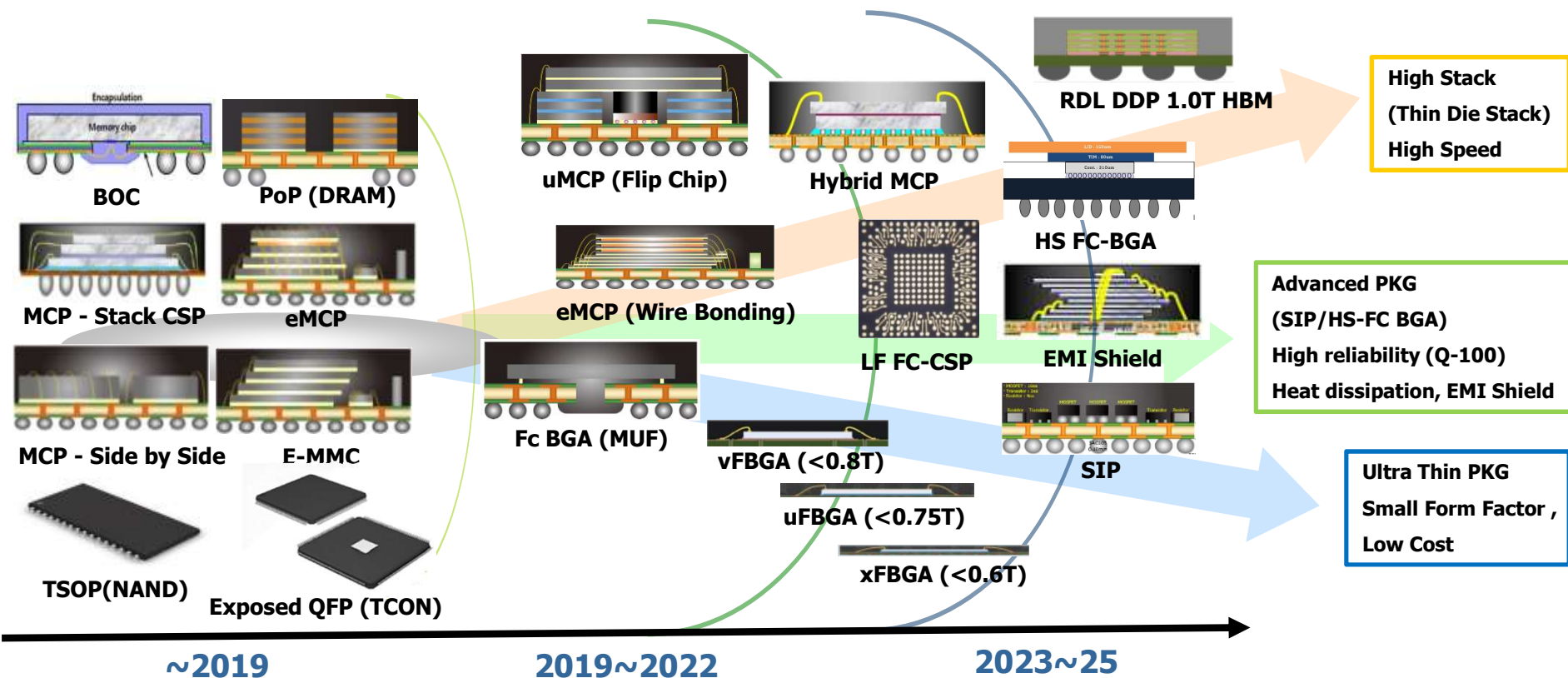
# Memory PKG Structure

DVC	Substrate PKG Structure				
SSD UFS	 SSD (2stack ~ 4stack)      UFS (4stack ~8Stack)				
Mobile DRAM	 M-DRAM (Rotation)	 M-DRAM (Side by Side)	 ePoP (4stack)	 PoP (4stack ~8stack)	 PoP (8stack ~16stack)
eMCP uMCP	 eMCP (Cont + Capacitor)	 eMCP (8~12stack)	 eMCP (12stack ~15stack)	 uMCP (Flip Cont + Capacitor)	 uMCP (Flip Cont + PMIC)
eMMC	 eMMC (Cont + Capacitor)	 eMMC (4 Stack)	 eMMC (8 Stack)	 eMMC (16 Stack ~ 32 Stack)	
FC-BGA BOC	 BOC	 RDL BOC	 Flip Chip BGA	 Hybrid PKG (NAND+FC-DRAM)	

## Advanced Technology / Customer Needs

### Business Structure

- A. High Stack / High Speed MCP Product Expansion
- B. Thermal performance, SIP, H/S FC BGA Product Development
- C. Small Form Factor, Ultra Thin PKG Product Development



	Equipment	Key Performance	Model
Reliability	HTST	RT~500°C	HS-2200
	HTST	RT~200°C	PV-211
	LTST	-75°C~150°C	PG-2KTH
	PCT	100~133°C / ~100% (2ATM)	PC-242III
	UHASt	121°C/100% 2ATM or 130°C/85% 2ATM	PC-304R7
	T/C	-65~150°C	KR-5002
	T/H	-40~150°C	THG-180
	T/H	0~120°C	KR-1005C
	Reflow	Max 350°C	XPM- 520N
No	Equipment	Ref. Standard	
1	PRECONDITION	JSTD020D-01, JESD22-A113	
2	HTST	JESD22A-103	
3	LTST	JESD22A-119	
4	THS	JESD22A-101	
5	PCT	JESD22A-102	
6	T/C	JESD22A-104	
7	UHASt	JESD22A-118	
8	SAM	JSTD035, JSTD020D-01	
9	Whisker Test	JESD22-A121	
10	Warpage Measurement	JESD22B-112	

	Character	Equipment	Key Performance	Model
Failure Analysis	Visual	SAM (Scanning Acoustic Microscope)	Non-destructive detection of delamination, void, crack	Quantum-350 EXHO-LS
		SEM (Scanning Electron Microscope)	Up to x150,000 Magnification Inspection	EVO-MA10
		X-Ray	Real time Microfocus X-ray	ME4100-N3W FXS-160.40 SFX-100
		High Power Scope	Up to x1,000 Visual Inspection	INM100
	Mechanical	Warpage simulation	Package warpage simulation test	AXP
		Grinder / Polisher / Section	Disc size : 8" / 50-350 RPM (10RPM step)	RB 209
		BST (Wire Ball Shear Test) BST (Solder Ball Shear Test)	Joint Strength Testers Joint Strength Testers	Dage4000 Dage2400A
		WPT (Wire Pull Test)	Joint Strength Testers	Dage4000
	Chemical	EDX (Energy Dispersive X-ray)	Surface Composition Analysis	NSS
		Inter-metalic test	Joint Strength Testers (Bond-ability)	-
		Wet Station	Chemical analysis stage [De-capsulation, Cratering test]	Wet Station

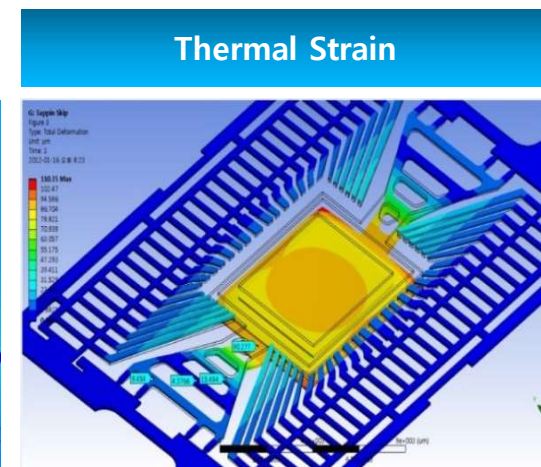
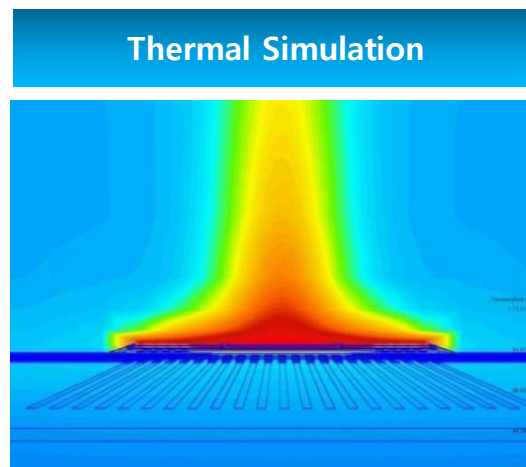
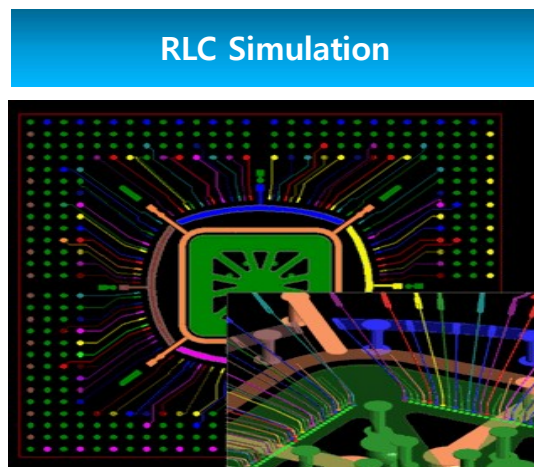


## Software

- Cadence Allegro Package Designer 16.6
  - ① Package/pin-delay length report, ② Constraint Manager (electrical and physical)
- Cadence Allegro Sigrity 16.6 : Generates IBIS package RLGC models with coupling
- ANSYS Mechanical v15
- Mechanical Simulation : Strip/Unit Warpage, Solder Joint Reliability, Thermal Stress
- Thermal Simulation
  - $\Theta_{JA}$  : Junction to Ambient Thermal Resistance &  $\Theta_{JC}$  : Junction to Case Thermal Resistance

## Thermal Modeling

- Using JESD51 Standard for modeling
- For Gaining an Accurate Results, Using Detail Model

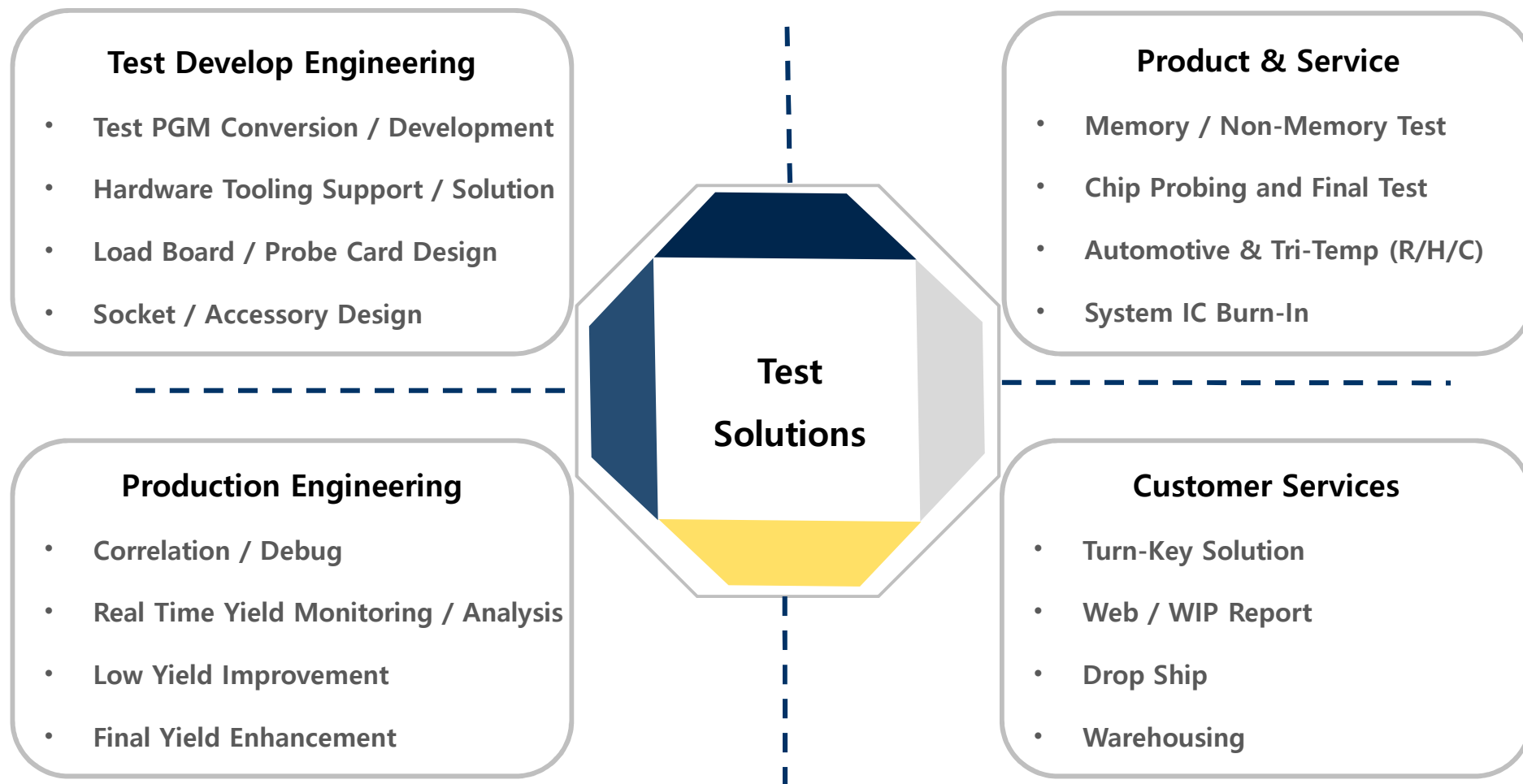






# TEST Division





CP & Final Test

Back-End

Shipment

**1. Incoming Inspection**



**2. Burn-In**



**3. Hot Test**



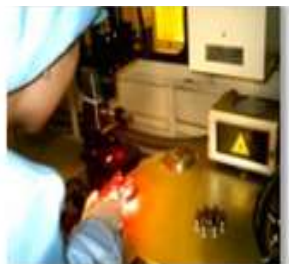
**4. Room Test**



**5. Cold Test**



**6. Marking**



**7. Final Visual Inspection(LIS)**



**8. Tape & Reel Pack**



**9. Packing**



**10. Finished Goods Store**



TESTER	MEMORY	MAKER	MODEL	SPEC		TARGET DEVICE
		ADVANTEST	T5503HS	4.511Gbps	512 DUTS(Max)	DDR4/LPDDR4
			T5503	2.286Gbps	512 DUTS(Max)	DDR3,4/LPDDR3/EMCP
			T5833	2.4Gbps	512 DUTS(Max)	LPDDR4
			T5558/T5588S	800Mbps	1024/512 DUTS(Max)	DDR3/LPDDR2,3,4
			T5593	1.06Gbps	128 DUTS(Max)	DDR3/GDDR3
			T5377/77S	286Mbps	256 DUTS(Max)	NAND FLASH
		NEXTEST	MAGNUM SSV	100Mbps	320 DUTS(Max)	NAND FLASH
			MAGNUM 5X	1.6Gbps	640 DUTS(Max)	EMCP
		UNITEST	SHM-9G	4.5Gbps	512 DUTS(Max)	DDR4/LPDDR4/GDDR4,5
	SYSTEM IC	ADVANTEST	V93K-S	PS1600, DPS64, WS-RF		RF
			V93K-S (Mar '23)	PS1600, FVI16, AVI64		Power Management
			V93K-S (Q3 '23)	PS1600, FVI16, AVI64, DPS64		Power, Analog, Controller
			V93K-S (Q4 '23)	PS1600, WS-MX, DPS64		AP & MCU
		UNITEST	Burn-In Tester	16 / 32 Slot		Dynamic Burn-In
		CHROMA	C3680 (Apr '23)	Cost Effective Test Solution		Mid/Low End Application

# Handler Status

HANDLER	MEMORY	MAKER	MODEL	SPEC	
		MIRAE	M500HT	Max Par 512	-40°C~125°C
			M500H	Max Par 512	-40°C~125°C
			M500	Max Par 512	-40°C~125°C
			M510	Max Par 512	-40°C~125°C
			M330H	Max Par 128	-40°C~125°C
		ADVANTEST	M6300	Max Par 256	-40°C~125°C
			M6243	Max Par 512	-40°C~125°C
		TECHWING	TW350HT	Max Par 512	-40°C~125°C
			TW-S7	Max Par 786	-40°C~125°C
			TW312	Max Par 320	-40°C~125°C
	SYSTEM IC	TECHWING	TW-153	Dual Temp	
			TW-154T	Tri-Temp	
		CHIPRIGHT	CHR9508	Tri-Temp	
		SEMES	OPUS-3 (Apr '23)	Chip Prober	



**Thank You!**

