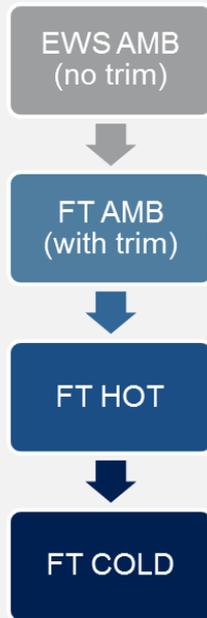


PRODUCT/PROCESS CHANGE NOTIFICATION

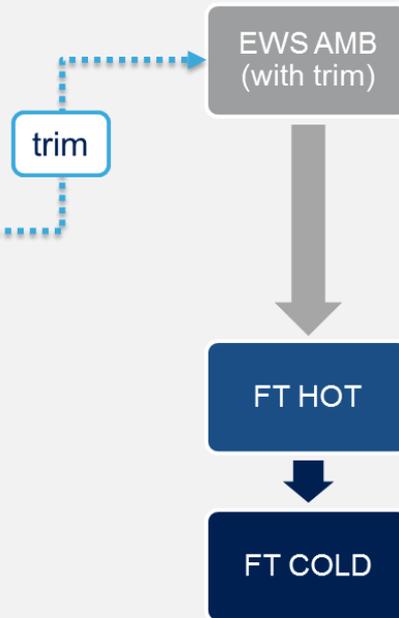
SUBJECT **L9781 (UI15) : TEST FLOW OPTIMIZATION**

<p>IMPACTED PRODUCTS</p>	<p>ST Line UI15 assembled in LQFP 64 10x10x1.4 package:</p> <ul style="list-style-type: none">  L9781  L9781TR
<p>MANUFACTURING STEP</p>	<p>Electrical Wafer Probing (EWS) and Final Test (FT)</p>
<p>INVOLVED PLANT</p>	<p>ST Agrate Plant (Italy) – for EWS ST Muar Plant (Malaysia) - for FT</p>
<p>CHANGE REASON</p>	<p>Manufacturing process optimization (Service and Capacity improvement)</p>
<p>CHANGE DESCRIPTION</p>	<p>Optimization of product electrical test flow, by moving the device trimming from FT AMB step to EWS AMB step and removing FT AMB step maintaining full overall test coverage (Test Programs). See following diagram:</p>

Current Flow



New Flow



Trimming function (internal references), previously performed at FT, has been moved to EWS step, performed at the same AMB temperature.

TRACEABILITY

Internal Traceability and Date-code. No impact on product part number and marking.

VALIDATION

Validation has been performed as per ZVEI guidelines:

Show Text		Values: Show Rows		Values: Show Columns		Evaluation level A / B / C		
ID	Type of change	No	Yes	A: Application level B: Component level C: Component level *: Not relevant for qualification matrix	Line evaluation (can be evaluated by data or audition site check)	Early Life Failure Rate ELFR	Electrical Distribution ED	Parameter Analysis: Component with changed device characteristics, electrical distribution
	Assessment of impact on Supply Chain regarding following aspects - contractual agreements - technical interface of processability/manufacturability of customer - form, fit, function, quality performance, reliability							
	ANY							
	DATA SHEET							
	DESIGN							
	PROCESS - WAFER PRODUCTION							
	BARE DIE							
	PROCESS - ASSEMBLY							
	PACKING/SHIPPING							
	EQUIPMENT							
	TEST FLOW							
	Q-GATE							
SEM-QG-01	Change of the test coverage/testing process flow used by the supplier to ensure data sheet compliance (e.g. elimination/addition of electrical measurement/test flow block, relaxation/enhancement of monitoring procedure or sampling)	-	P	C	•	*	•	•
Tests, which should be considered for the appropriate process change.				C	•	*	•	•
Tests, which should be considered for the appropriate process change after selection of condition table.					•	*	•	•
Suppliers performed tests (mark with an 'X' for done or 'G' for generic)						n.a.	X	X

Validation has been performed according to following steps:

- ✚ ELFR: not applicable (no Burn In)
- ✚ Trimming at EWS (two lots vs. standard production):
 1. Statistical data analysis (Mean, Cp, Cpk) → PASS
 2. Wafer maps comparison (trim vs. no trim) → PASS
 3. EWS trim vs. EWS no trim Data log comparison → PASS
- ✚ FT new flow (two lots vs. standard production) after trimming at EWS AMB:
 1. FT AMB (short flow for data collection only): measurement of parameters trimmed at EWS AMB only, to check the correct execution of EWS AMB trimming; all pcs (good + fails) moved to next step (FT HOT)
 2. FT HOT (standard flow)
 3. FT COLD (standard flow)
 4. FT AMB (full test sequence – to verify no test escapes at AMB temperature): acceptance criteria: 100% yield (no rejects allowed)

Summary of above validation procedure is herewith reported:

			TEST AMB								
FT lot	Wf#	Diff#	Qty IN	Good	Para	VAR	OS	BIN 2	Para GIR	OS GIR	Yield
998332FV01	#2	1816BNAT02	1168								
998332FW01	#25	1747GSHT02	1294								

Trimming verification

Standard flow

TEST HOT										
Qty IN	Good	Para	OS	VAR	BIN 2	Para GIR	OS GIR	Yield		
1168	1120	21	23	4	0	16	1	97.35%		
1294	1201	33	56	4	0	0	3	93.04%		

Standard flow

TEST COLD									
Qty IN	Good	Para	OS	Lost	BIN 2	Para GIR	OS GIR	Yield	
1120	1095	19	1	1	4	9	1	98.66%	
1201	1177	12	3	1	8	3	1	98.33%	

Original flow.
Acceptance criteria:
no rejects allowed

TEST AMB									
Qty IN	Good	Para	VAR	OS	BIN 2	Para GIR	OS GIR	Yield	
1095	1095	0	0	0	0	0	0	100%	
1177	1177	0	0	0	0	0	0	100%	

✚ According to the above FT validation activity, following data have been produced (assembled components):

1. Statistical data analysis (Mean, Cp, Cpk) → PASS
2. Mean value comparison vs. standard production lot → PASS
3. Additional FT AMB at the end of the flow → PASS (no fails)

Validation has been completed positively and new Electrical Test Flow can be released for production, ensuring original test coverage and quality level.

CURRENT PRODUCTS

Following new Electrical Test Flow validation, it will implemented on 100% device production upon Customer agreement.

REPORTS

See attached 11206 Validation.zip that contains below reports:

- EWS Cpk Report
- EWS Data Log Comparison
- EWS Maps Comparison
- FT Cpk Report
- FT Statistics Report