PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data	
1.1 Company	STMicroelectronics International N.V
1.2 PCN No.	ADG/23/14279
1.3 Title of PCN	L9788 (UR66) - Additional Diffusion Site Activation (Singapore)
1.4 Product Category	L9788, L9788TR
1.5 Issue date	2023-10-01

2. PCN Team	
2.1 Contact supplier	
2.1.1 Name	ROBERTSON HEATHER
2.1.2 Phone	+1 8475853058
2.1.3 Email	heather.robertson@st.com
2.2 Change responsibility	
2.2.1 Product Manager	Vito GRAZIANO
2.1.2 Marketing Manager	Francesco MACINA,Tony BARBUZZI
2.1.3 Quality Manager	Marcello Donato MENCHISE

3. Change		
3.1 Category	3.2 Type of change	3.3 Manufacturing Location
Transfer	Line transfer for a full process or process brick (process step, control plan, recipes) from one site to another site: Wafer fabrication	ST Ang Mo Kio - Singapore receiving Site

4. Description of change		
	Old	New
4.1 Description	ST Agrate - Italy Diffusion Site	ST Agrate - Italy and Ang Mo Kio - Singapore Diffusion Sites
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	No Impact	

5. Reason / motivation for change	
5.1 Motivation	Service and Capacity improvement
5.2 Customer Benefit	CAPACITY INCREASE

6. Marking of parts / traceability of change	
6.1 Description	Dedicated Finished Good Code

7. Timing / schedule	
7.1 Date of qualification results	2024-12-29
7.2 Intended start of delivery	2025-01-31
7.3 Qualification sample available?	Upon Request

8. Qualification / Validation			
8.1 Description			
8.2 Qualification report and qualification results	In progress	Issue Date	

9. Attachments (additional documentations)
14279 Public product.pdf 14279 Details.pdf

10. Affected parts		
10. 1 Current		10.2 New (if applicable)
10.1.1 Customer Part No	10.1.2 Supplier Part No	10.1.2 Supplier Part No
	L9788TR	

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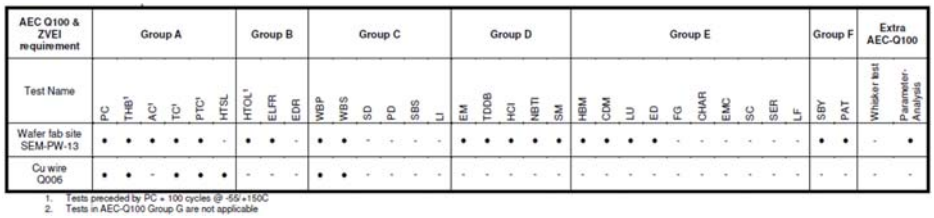
PRODUCT/PROCESS CHANGE NOTIFICATION

TITLE	**L9788 (UR66) - Additional Diffusion Site Activation (Singapore)**
IMPACTED PRODUCTS	ST Line UR66 diffused in BCD9sL technology and assembled in LQFP-EP 100 14x14 package: - L9788 - L9788TR
MANUFACTURING STEP	Silicon diffusion
INVOLVED PLANT	ST Singapore (Ang Mo Kio) – Recipient Site
CHANGE REASON	Service and Capacity improvement
CHANGE DESCRIPTION	Activation of ST Singapore (Ang Mo Kio) silicon diffusion site beside current one ST Agrate – Italy.
TRACEABILITY	Dedicated Finished Good Code
VALIDATION	Validation as per ZVEI guidelines, item SEM-PW-13: Move all or parts of production to a different wafer fab site, leading to following qualification plan:  see below details.
CURRENT PRODUCTS	Following activation of product diffusion in Singapore, device will be available from both diffusion sites, depending on ST production requirements.
REPORTS	Qualification activity is in progress; validation reports are expected to be available by Q4-2024

AEC Q100 & ZVEI requirement	Group A						Group B			Group C						Group D					Group E											Group F		Extra AEC-Q100	
Test Name	PC	THB[1]	AC[1]	TC[1]	PTC[1]	HTSL	HTOL[1]	ELFR	EDR	WBP	WBS	SD	PD	SBS	LI	EM	TDDB	HCI	NBTI	SM	HBM	CDM	LU	ED	FG	CHAR	EMC	SC	SER	LF	SBY	PAT	Whisker test	Parameter-Analysis
Wafer fab site SEM-PW-13	•	•	•	•	•	-	•	•	-	•	•	-	-	-	-	•	•	•	•	•	•	•	•	•	-	-	-	-	-	-	•	•	-	•
Cu wire Q006	•	•	-	•	•	•	-	-	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. Tests preceded by PC + 100 cycles @ -55/+150C
2. Tests in AEC-Q100 Group G are not applicable

Q100 Qualification Test Plan
QP001423CS2039_01

Automotive Grade Level = 1 -40 to +125C MSL = 3

Supplier Name:	STMicroelectronics		**General Specification:**	AEC-Q100 Rev. H	
Supplier Code:	UR66		**Supplier Wafer Fabrication:**	Singapore (SG8E)	
Supplier Part Number:	L9788		**Supplier Wafer Test:**	Singapore (SG8E)	
Supplier Contact:	D. Bini / R. Alberti		**Supplier Assembly Site:**	Muar	
Supplier Family Type:	BCD9sL / LQFP100 exp pad down (Cu wires 1.2/2mils)		**Supplier Final Test Site:**	Muar	
Device Description:	IC for engine management system		**Supplier Reliability Signature:**	D. Bini	
PPAP Submission Date:			**Customer Test ID:**		
Reason for Qualification:	Diffusion plant transfer		**Customer Part Number:**		
Prepared by Signature:	R. Alberti	Date: 30 May 2022	**Customer Approval Signature:**		

Q100 and ZVEI requirements

AEC Q100 & ZVEI requirement	Group A						Group B			Group C						Group D					Group E												Group F		Extra AEC-Q100	
Test Name	PC	THB[1]	AC[1]	TC[1]	PTC[1]	HTSL	HTOL[1]	ELFR	EDR	WBP	WBS	SD	PD	SBS	LI	EM	TDDB	HCI	NBTI	SM	HBM	CDM	LU	ED	FG	CHAR	EMC	SC	SER	LF	SBY	PAT	Whisker test	Parameter-Analysis
Wafer fab site SEM-PW-13	•	•	•	•	•	-	•	•	-	•	•	-	-	-	-	•	•	•	•	•	•	•	•	•	-	-	-	-	-	-	•	•	-	•
Cu wire Q006	•	•	-	•	•	•	-	-	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. Tests preceded by PC + 100 cycles @ -55/+150C
2. Tests in AEC-Q100 Group G are not applicable

Test	#	Reference	Test Conditions	Requirements			Comments	UR66	Notes
				Lots	S.S.	Total			
PC	A1	JESD22 A113 J-STD-020	Preconditioning: (Test @ Rm) SMD only Moisture Preconditioning for THB, AC, TC, PTC, HTOL, HTRB Peak Reflow Temp = 260°C	All surface mount parts prior to A2, A3, A4, A5, B1			MSL = 3	Planned	+100 cycles after reflow.
THB	A2	JESD22 A110	Temperature Humidity Bias: (Test @ Rm/Hot) 85°C, 85% Target: 1000h Q006: 2000h	3	77	231	-	1 lot TTTT-LL 1 lot LLTT-HH+10% 1 lot TTLT-LL	Extension up to 2000h for Q006.
AC	A3	JESD22 A118	Autoclave: (Test @ Rm) 121°C / 2 atm Target: 96h	3	77	231	-	1 lot TTTT-LL 1 lot LLTT-LL 1 lot TTLT-LL	
TC	A4	JESD22 A104	Temperature Cycle: (Test @ Hot) -55/+150°C Target: 1000cy Q006: 2000cy	6	77	462	-	1 lot TTTT-LL 1 lot TTTT-HH+10% 1 lot LLTT-LL 1 lot LLTT-HH+10% 1 lot TTLT-LL 1 lot TTLT-HH+10%	Extension up to 2000cy for Q006.
PTC	A5	JESD22 A105	Power Temperature Cycle: (Test @ Room/Hot) Ta=-40°C / Tj = +150°C Target: 1000cy Q006: 2000cy	2	23	45	-	1 lot TTTT-LL 1 lot TTTT-HH+10%	Extension up to 2000cy for Q006.
HTSL	A6	JESD22 A103	High Temperature Storage Life: (Test @ Rm/Hot) 175°C Target: 500h Q006: 1000h	3	45	135	-	1 lot TTTT-LL 1 lot LLTT-LL 1 lot TTLT-LL	Extension up to 1000h for Q006.

Test	#	Reference	Test Conditions	Requirements			Comments	UR66	Notes
				Lots	S.S.	Total			
HTOL	B1	JESD22 A108	High Temp Operating Life: (Test @ Rm/Cold/Hot) Tj 175°C Target: 1556h	3	77	231	-	1 lot TTTT-HH+10% 1 lot LLTT- HH+10% 1 lot TTLT-HH+10%	
ELFR	B2	AEC-Q100-008	Early Life Failure Rate: (Test @ Rm/Hot)	3	800	2400	-	-	Replaced by Safe launch data.
EDR	B3	AEC-Q100-005	NVM Endurance & Data Retention Test: (Test @ Rm/Hot)	-	-	-	-	-	N/A.
WBS	C1	AEC-Q100-001 AEC-Q003	Wire Bond Shear Test: (Cpk > 1.67)	30 bonds 5 parts Min.			-	Assembly data and according to Q100 and Q006	
WBP	C2	Mil-STD-883, Method 2011 AEC-Q003	Wire Bond Pull: (Cpk > 1.67); Each bonder used	30 bonds 5 parts Min.			-	Assembly data and according to Q100 and Q006	
SD	C3	JESD22 B102 JSTD-002D	Solderability: (>95% coverage) 8hr steam aging prior to testing	1	15	15	-	Assembly data	
PD	C4	JESD22 B100, JESD22 B108 AEC-Q003	Physical Dimensions: (Cpk > 1.67)	3	10	30	-	Assembly data	
SBS	C5	AEC-Q100-010 AEC-Q003	Solder Ball Shear: (Cpk > 1.67); 5 balls from min. of 10 devices	3	50 balls	-	-	-	N/A.
LI	C6	JESD22 B105	Lead Integrity: (No lead cracking or breaking); Through-hole only; 10 leads from each of 5 devices	1	50 leads	-	-	-	N/A.
EM	D1	JESD61	Electromigration	-	-	-	-	-	Process qualification data.
TDDB	D2	JESD35	Time Dependant Dielectric Breakdown	-	-	-	-	-	Process qualification data.
HCI	D3	JESD60 & 28	Hot Carrier Injection	-	-	-	-	-	Process qualification data.

Test	#	Reference	Test Conditions	Requirements			Comments	UR66	Notes
				Lots	S.S.	Total			
NBTI	D4	JESD90	Negative Bias Temperature Instability	-	-	-	-	-	Process qualification data.
SM	D5	JESD61, 87, & 202	Stress Migration	-	-	-	-	-	Process qualification data.
TEST	E1	User/Supplier Specification	Pre and Post Stress Electrical Test:	All	All	All	-	-	
HBM	E2	AEC-Q100-002	Electrostatic Discharge, Human Body Model: (Test @ Rm/Hot); (2KV HBM / Class 2 or better)	-	-	-	-	1 lot	For Global pins 4kV vs GND.
CDM	E3	AEC-Q100-011	Electrostatic Discharge, Charged Device Model: (Test @ Rm/Hot); (750V corner leads, 500V all other leads / Class C4B or better)	-	-	-	-	1 lot	
LU	E4	AEC-Q100-004	Latch-Up: (Test @ Rm/Hot)	-	-	-	-	1 lot	
ED	E5	AEC-Q100-009 AEC-Q003	Electrical Distributions: (Test @ Rm/Hot/Cold) (where applicable, Cpk >1.67)	3	30	90	-	Planned	Covered by Electrical Characterization.
FG	E6	AEC-Q100-007	Fault Grading FG shall be = or > 90% for qual units	-	-	-	-	-	
CHAR	E7	AEC-Q003	Characterization: (Test @ Rm/Hot/Cold)	-	-	-	-	-	Covered by Electrical Characterization.
EMC	E9	SAE J1752/3	Electromagnetic Compatibility (Radiated Emissions)	-	-	-	-	-	
SC	E10	AEC Q100-012	Short Circuit Characterization	-	-	-	-	-	N/A.
SER	E11	JESD89-1 JESD89-2 JESD89-3	Soft Error Rate	-	-	-	-	-	N/A.

Test	#	Reference	Test Conditions	Requirements			Comments	UR66	Notes
				Lots	S.S.	Total			
LF	E12	AEC-Q005	Lead (Pb) Free: (see AEC-Q005)	-	-	-	-	-	Covered by Test group A & C.
PAT	F1	AEC-Q001	Process Average Testing: (see AEC-Q001)	All	All	All	Reject units outside Avg.	-	Applied in production.
SBA	F2	AEC-Q002	Statistical Bin/Yield Analysis: (see AEC-Q002)	All	All	All	Reject units outside criteria	-	Applied in production.
MS	G1	JESD22 B104	Mechanical Shock: (Test @ Rm)	1	15	15	-	-	N/A.
VFV	G2	JESD22 B103	Variable Frequency Vibr: (Test @ Rm)	1	15	15	-	-	N/A.
CA	G3	MIL-STD-883 Method 2001	Constant Acceleration: (Test @ Rm)	1	15	15	-	-	N/A.
GFL	G4	MIL-STD-883 Method 1014	Gross and Fine Leak:	1	15	15	-	-	N/A.
DROP	G5	----------	Drop Test: (Test @ Rm) MEMS cavity parts only. Drop part on each of 6 axes once from a height of 1.2m onto a concrete surface.	1	5	5	-	-	N/A.
LT	G6	MIL-STD-883 Method 2004	Lid Torque	1	5	5	-	-	N/A.
DS	G7	MIL-STD-883 Method 2019	Die Shear	1	5	5	-	-	N/A.
IWV	G8	MIL-STD-883 Method 1018	Internal Water Vapor	1	5	5	-	-	N/A.
HTRB	-	JESD22 A108	High Temperature Reverse Bias: (Test @ Rm) Tj=150°C Target: 1000h	1	45	45	-	1 lot TTTT-HH+10%	

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PCN Title : L9788 (UR66) - Additional Diffusion Site Activation (Singapore)

PCN Reference : ADG/23/14279

Subject : Public Products List

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L9788TR	L9788	

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