

RER1809 for PCN10962/PCN11730 F9GO2S Technology Transfer to Crolles 300

Reliability Evaluation Plan

September 2nd, 2019

MDG MCD Quality & Reliability Department



RER1809 – F9GO2S Technology Transfer to Crolles 300 STM32 Die Test Vehicles

Die Vehicle	Process Perimeter	Assembly Line	Package	Number of Reliability Lots
447	F9GO2S	MUAR / ATP	LQFP14*14 100L	3 lots to qualify Process Perimeter Then 1 lot for each additional Die
417		JSCC / MUAR	LQFP10*10 64L	
437		ATP	LQFP20*20 144L	
427		MUAR / ATP	LQFP14*14 100L	
429		MUAR / ATP	LQFP14*14 100L	
457		JSCC / MUAR / ATP	LQFP7*7 32L	
425		JSCC / MUAR / ATTP	LQFP7*7 48L	

RER1809 – F9GO2S Technology Transfer to Crolles 300 STM32 Die Reliability Trials

Reliability Trial & Standard		Test Conditions	Pass Criteria	Lot Strategy	Units per Lot
ESD HBM	0060102 JESD22-A114ANSI/ESDA JEDEC JS-001	25°C	2kV (class 2)	1 to 3 lots	3
ESD CDM	ESD Charged Device Model ANSI/ESD STM5.3.1	Aligned with device datasheet	250V to 500V	1 lot	3
LU	0018695 JESD78	105°C/125°C REG-ON/REG-OFF Configuration Aligned with device datasheet	No concern	1 to 3 lots	3 3
EDR + Bake	JESD22-A117 JESD22-A103	105°C & 3.6V Cycling 150°C Bake	10K + 100k cycles 1500h 1000h	1 to 3 lots For process perimeter (*) For die perimeter (**)	77
EDR + Bake	JESD22-A117 JESD22-A103	25°C & 3.6V Cycling 150°C Bake	10K + 100k cycles 168h	1 to 3 lots	77
EDR + Bake	JESD22-A117 JESD22-A103	-40°C & 3.6V Cycling 150°C Bake	10K + 100k cycles 168h	1 to 3 lots	77
ELFR	MIL-STD-883 Method 1005 JESD22-A108 JESD74	125°C & 3.6V	48h	3 lots for process perimeter 1 lot for Die perimeter	2000 units min in total
HTOL	MIL-STD-883 Method 1005 JESD22-A108	125°C & 3.6V 100MHz	1200h 600h	1 to 3 lots For process perimeter (*) For die perimeter (**)	77

(*) on 1st lot of process perimeter

(**) on 2nd & 3rd of process perimeter or 1 lot of die perimeter

RER1809 – F9GO2S Technology Transfer to Crolles 300 STM32 Package Test Vehicles

Package Line	Assembly Line	Package	Die Vehicle / Partial Rawline code	Number of Reliability Lots
LQFP	MUAR	LQFP14*14 100L	447 / 1L*447	3 lots to qualify Process Perimeter Then 1 lot by Package Assembly Line
	JSCC	LQFP10*10 64L	417 / 5W*417	
	JSCC	LQFP7*7 48L	447 / 5B*447	
QFN	ATP1	UFQFPN3*3 20L	457 / E4*457	
	JSCC	UFQFPN4*4 28L	457 / MB*457	
	JSCC	UFQFPN5*5 32L	447 / MG*447	
WLCSP	ATT1	WLCSP 49L	447 / 51*447	
TSSOP20	ATP1	TSSOP 20	457 / YA*457	

RER1809 – F9GO2S Technology Transfer to Crolles 300 STM32 Package Test Vehicles

Package Line	Assembly Line	Package	Die Vehicle / Partial Rawline code	Number of Reliability Lots
LQFP	ASEKH	LQFP20*20 144L	437 / 1A*437	3 lots to qualify Process Perimeter Then 1 lot by Package Assembly Line
	ASEKH	LQFP14*14 100L	447 / 1L*447	
	ASEKH	LQFP10*10 64L	447 / 5W*447	
	ASEKH	LQFP7*7 32L	457 / 5V*457	
QFN	CALAMBA	UFQFPN5*5 32L	457 / MG*457	
WLCSP	ASEKH	WLCSP 49L	447 / 51*447	
UFBGA	ASEKH	UFBGA 5X5	447 / 2I*447	
TSSOP14	ATP1	TSSOP 14	457 / 6R*457	
TFBGA	MUAR	TFBGA 5X5	417 / R8*417	

RER1809 – F9GO2S Technology Transfer to Crolles 300 STM32 Package Reliability Trials

Reliability Trial & Standard		Test Conditions	Pass Criteria	Units per Lot	Lot Strategy
PC	Pre Conditioning: Moisture Sensitivity Jedec Level 1 J-STD-020/ JESD22-A113	Bake (125°C / 24h) Soak (85°C / 85% RH / 168h) for level 1 Convection reflow: 3 passes with Jedec level 1	3 Passes MSL1/3	231 to 308 (**)	1 to 3 lots
	Pre Conditioning: Moisture Sensitivity Jedec Level 3 J-STD-020/ JESD22-A113	Bake (125°C / 24h) Soak (30°C / 60% RH / 192h) for level 3 Convection reflow: 3 passes with Jedec level 3			
UHASt (*) (**)	Unbiased Highly Accelerated Temperature & Humidity Stress JESD22-A118	130°C, 85%RH, 2 Atm	96h	77	1 to 3 lots
TC (*)	Thermal Cycling JESD22-A104	-65°C +150°C	500Cy	77	1 to 3 lots
THB (*)	Temperature Humidity Bias JESD22-A101	85°C, 85% RH, bias	1000h	77	1 to 3 lots
HTSL (*)	High Temperature Storage Life JESD22-A103	150°C - no bias	1000h	77	1 to 3 lots
Construction Analysis	Upon In Process Control ST Specifications	Aligned with ST specifications	No concern	15	1 by package assembly line
				10	
ESD CDM	ESD Charged Device Model ANSI/ESD STM5.3.1	Aligned with device datasheet	250V to 500V	3	1 by package assembly line



(*) Tests performed after preconditioning

(**) UHASt not done for BGA

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**PRODUCT/PROCESS
CHANGE NOTIFICATION
PCN 11730 – Additional information**

**STM32L05/07/08 products Crolles CRL300
Addendum to PCN10962
to include WLCSP12" package**

MDG - Microcontrollers Division (MCD)

What are the changes?

Changes described in the below table:

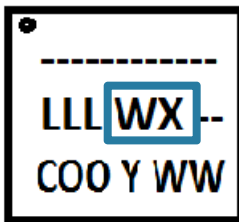
	Current back-end source		Added back-end site	
Assembly site	Stats ChipPAC Singapore WLCSP 8"	Amkor Taiwan ATT WLCSP 8"	ASE Kaohsiung Taiwan WLCSP12"	Amkor Taiwan ATT WLCSP12"
Solder ball	SACN125		SAC405	
Passivation (2)	PI		Low Temp PI	
Redistribution layer thickness (2)	Standard Copper or Alu RDL	Standard Copper RDL	Thick Copper RDL	
Enhanced traceability in marking (1)	No		Yes	

(1) added only for package those X,Y are beyond 3.8mm x 3.8mm

(2) visual aspect of passivation and redistribution layer may vary from one BE site to another

How can the change be seen?

The standard marking is



WX code indicates the Front End plant code.

The marking is changing as follows:

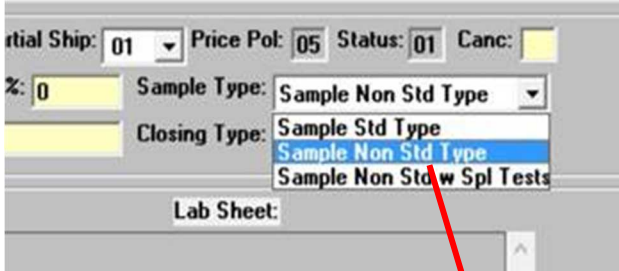
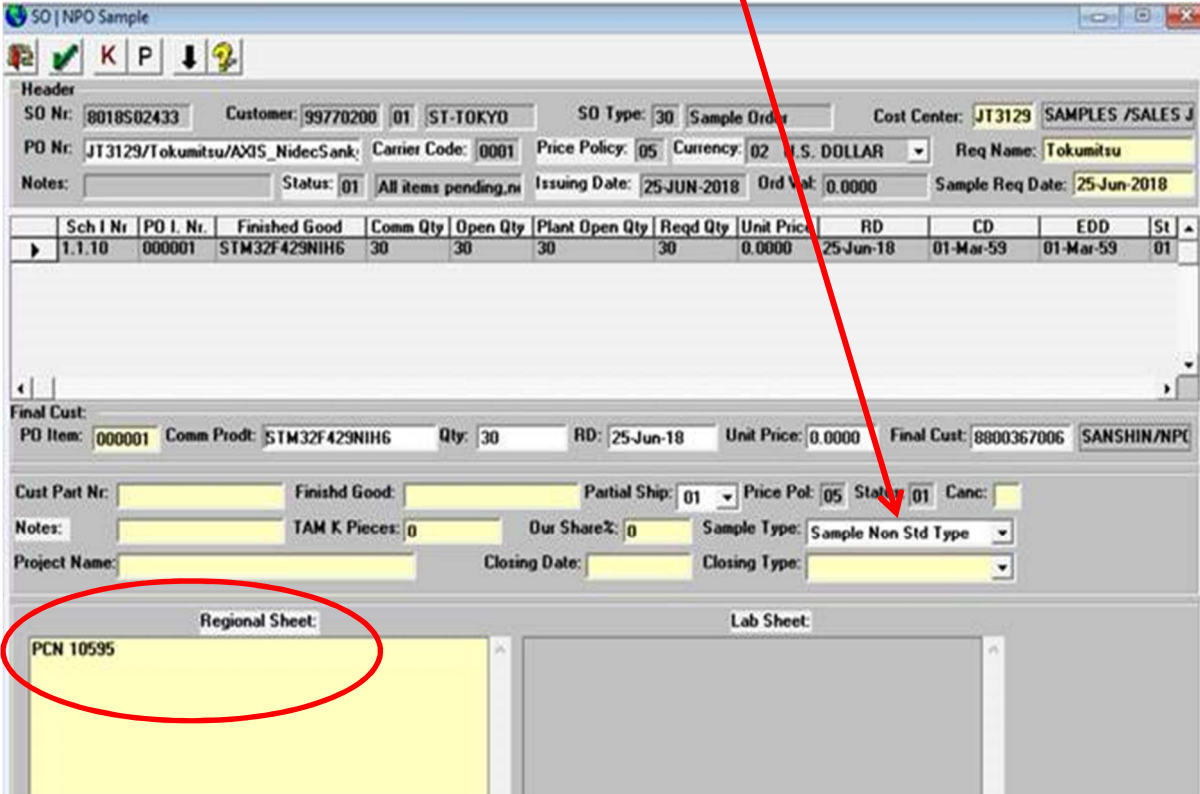
Existing		Additional	
WX code	Fab	WX code	Fab
VG	Rousset 8" Diffusion Plant	VQ	Crolles CRL300 Diffusion Plant

Please refer to the DataSheet for marking details.

How to order samples?

For all samples request linked to this PCN, please:

- place a **Non-standard** sample order (choose Sample Non Std Type from pull down menu)
- insert the PCN number “**PCN 11730**” into the NPO Electronic Sheet/**Regional Sheet**
- request sample(s) through Notice tool, indicating a single Commercial Product for each request

SO | NPO Sample

Header

SO Nr: 8018S02433 Customer: 99770200 01 ST-TOKYO SO Type: 30 Sample Order Cost Center: JT3129 SAMPLES /SALES J

PO Nr: JT3129/Tokumitsu/AXIS_NidecSank Carrier Code: 0001 Price Policy: 05 Currency: 02 U.S. DOLLAR Req Name: Tokumitsu

Notes: Status: 01 All items pending,ni Issuing Date: 25-JUN-2018 Ord Val: 0.0000 Sample Req Date: 25-Jun-2018

Sch I Nr	PO I. Nr.	Finished Good	Comm Qty	Open Qty	Plant Open Qty	Reqd Qty	Unit Price	RD	CD	EDD	St
1.1.10	000001	STM32F429NIH6	30	30	30	30	0.0000	25-Jun-18	01-Mar-59	01-Mar-59	01

Final Cust: PO Item: 000001 Comm Prod: STM32F429NIH6 Qty: 30 RD: 25-Jun-18 Unit Price: 0.0000 Final Cust: 8800367006 SANSHIN/NPC

Cust Part Nr: Finished Good: Partial Ship: 01 Price Pol: 05 Status: 01 Canc:

Notes: TAM K Pieces: 0 Our Share: 0 Sample Type: Sample Non Std Type

Project Name: Closing Date: Closing Type:

Regional Sheet: **PCN 10595**

Lab Sheet:

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