


**PRODUCT / PROCESS CHANGE NOTIFICATION**

**1. PCN basic data**

1.1 Company		STMicroelectronics International N.V
1.2 PCN No.	MDG/24/14645	
1.3 Title of PCN	ASE Kaohsiung (Taiwan) FBGA package copper palladium bonding wire introduction on STM32H72/73x, STM32H74/75x and STM32U5x listed products.	
1.4 Product Category	STM32H72x, STM32H73x, STM32H74x, STM32H75x, and STM32U5x	
1.5 Issue date	2024-05-16	

**2. PCN Team**

<b>2.1 Contact supplier</b>	
2.1.1 Name	PIKE EMMA
2.1.2 Phone	+44 1628896111
2.1.3 Email	emma.pike@st.com
<b>2.2 Change responsibility</b>	
2.2.1 Product Manager	Ricardo Antonio DE SA EARP
2.1.2 Marketing Manager	Veronique BARLATIER
2.1.3 Quality Manager	Pascal NARCHE

**3. Change**

3.1 Category	3.2 Type of change	3.3 Manufacturing Location
Materials	Direct Material: Bond Wire - Metallurgy (metallic composition/ raw material)	ASE Kaohsiung (Taiwan)

**4. Description of change**

	Old	New
4.1 Description	Assembly lines / wire bonding: - AMKOR (Philippines) / Gold wire - ASE Kaohsiung (Taiwan) / Gold wire	Assembly lines / wire bonding: - AMKOR (Philippines) / Gold wire - ASE Kaohsiung (Taiwan) / Gold wire - ASE Kaohsiung (Taiwan) / Copper Palladium wire - Additional Source
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	no impact on form, Fit, Function	

**5. Reason / motivation for change**

5.1 Motivation	To improve service
5.2 Customer Benefit	SERVICE IMPROVEMENT

**6. Marking of parts / traceability of change**

6.1 Description	traceability ensured by ST Internal tools
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**7. Timing / schedule**

7.1 Date of qualification results	2024-05-06
7.2 Intended start of delivery	2024-06-05
7.3 Qualification sample available?	Upon Request

**8. Qualification / Validation**

8.1 Description	14645 MDG-MCD-RER2021 V3.0 - PCN12916 - PCN14645 - ASE KH xFBGA package - Reliability Evaluation Report.pdf		
8.2 Qualification report and qualification results	Available (see attachment)	Issue Date	2024-05-16

9. Attachments (additional documentations)
14645 Public product.pdf 14645 MDG-MCD-RER2021 V3.0 - PCN12916 - PCN14645 - ASE KH xFBGA package - Reliability Evaluation Report.pdf 14645 PCN14645_Additional information.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
	STM32H745XIH3	
	STM32H745XIH3TR	
	STM32U599NIH6Q	

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## Reliability Evaluation Report

***MDG–MCD–RER2021***

**ASE Kaohsiung (Taiwan) xFBGA package  
Bonding Wire procurement flexibility  
(PCN12916 – PCN14645)**

General Information		Traceability			
Commercial Product	STM32H743IIK6	Diffusion Plant	CROLLES 300 / France TMSC FAB 14 / TAIWAN		
	STM32H742IGK6				
	STM32F417IGH6				
	STM32L433VC16				
	STM32U535RE16				
	STM32U535VE16				
	STM32F439IIH6				
Product Line	450X66, 413X66, 435X66 455X66, 419X66	Assembly Plant	ASE KH, TAIWAN		
Die revision	X450XXXV, X413XXX4 X435XXXZ, X455XXXA X419XXX4				
Package	UFBGA 10x10 176+25L UFBGA 7x7 100L UFBGA 5X5X0.6 64L				
Silicon Technology	CMOS040_LP CROLLES 300 CMOSM10 TSMC 90nm eFlash Generic TSMC TN40CE TSMC	Reliability Assessment			
Division	MDRF-MCD	Pass	<input checked="" type="checkbox"/>		
		Fail	<input type="checkbox"/>		

**Note:** this report is a summary of the reliability trials performed in good faith by STMicroelectronics in order to evaluate the electronic device conformance to its specific mission profile. This report and its contents shall not be disclosed to a third party without previous written agreement from STMicroelectronics or under the approval of the author (see below).

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Version	Date	Author	Function
1.0	29th March 2022	Celine NAVARRO	MDG–MCD–QA Back end
2.0	11th September 2023	Celine NAVARRO	MDG–GPM–Q&R Back end
3.0	30th April 2024	Celine NAVARRO	MDRF–GPM–Q&R Back end

**APPROVED BY:**

Function	Location	Name	Date
Division Quality Manager	Rousset	Pascal NARCHE	29th March 2022
Subgroup Quality Manager	Rousset	Pascal NARCHE	13th September 2023
GPM BE Q&R Manager	Rousset	Berengere ROUTIER–SCAPPUCCI	3 <sup>rd</sup> May 2024
Subgroup Quality Manager	Rousset	Pascal NARCHE	06 <sup>th</sup> May 2024

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## 1 RELIABILITY EVALUATION OVERVIEW

### 1.1 Objective

The aim of this report is to present results of the reliability evaluation performed on die 450, 413, 419 for UFBGA 10X10, 435 for UFBGA 7x7, 455 for UFBGA5x5 and UFBGA7x7 ASE Kaohsiung (Taiwan) with CuPd wires.

Changes are described here below for PCN12916:

	Existing Back-End Line	Added back-end line
Assembly site	ASE Kaohsiung (Taiwan)	
Wire	Gold 0.8mil	Copper Palladium 0.8mil

Changes are described here below for PCN14645:

	Existing back-end line		Added back-end line
Assembly site	AMKOR ATP (Philippines)		ASE Kaohsiung (Taiwan)
Molding Compound	GE100LFCS		KYOCERA G1250AAS
GLUE	Ablebond GLUE 2300	Nitto EM-760L2-P	Ablestick ATB-125 / Ablestick ATB-125(30) / Ablestick 2100AC
Wire	Gold 0.8mil		Copper Palladium 0.8mil
Marking composition	Without 2D		With 2D
PP code on marking	7B		GQ

## 1.2 Reliability Strategy

Test vehicles for reliability trials are described here below:

Die	Package	Body	Pitch	Package Code	Wire	Assy	Trial
450	UFBGA 176+25L	10x10	0.65	A0E7	CuPd	ASE KH	4 assembly lots
413	UFBGA 176+25L	10x10	0.65	A0E7	CuPd	ASE KH	1 assembly lot
435	UFBGA 100L	7x7	0.5	A0C2	CuPd	ASE KH	1 assembly lot
455	UFBGA 64L	5x5	0.5	A019	CuPd	ASE KH	1 assembly lot
455	UFBGA 100L	7x7	0.5	A0C2	CuPd	ASE KH	1 assembly lot
419	UFBGA 176+25L	10x10	0.65	A0E7	CuPd	ASE KH	1 assembly lot

Qualification is based on standard STMicroelectronics Corporate Procedures for Quality and Reliability, in full compliancy with the JESD–47 international standard.

## 1.3 Conclusion

All reliability tests have been completed with positive results. Neither functional nor parametric rejects were detected at final electrical testing.

According to good reliability tests results in line with validated product mission profile and reliability strategy, the qualification is granted for all products with same silicon technology as Test Vehicle in xFBGA package in ASE Kaohsiung.

Refer to Section 3.0 for reliability test results.



## 2 TEST VEHICLE CHARACTERISTICS

### 2.1 Generalities

Package line	Assembly Line Package	Device (Partial RawLine Code)	Diffusion Process	Number of Lots
UFBGA	UFBGA10x10x0.6 176+25L	E0MR*450CSXU	CMOS040 Crolles 300	3
UFBGA	UFBGA10x10x0.6 176+25L	24MR*450QCXV	CMOS040 Crolles 300	1
UFBGA	UFBGA10x10x0.6 176+25L	E2MR*413CSX4	CMOSM10 TSMC	1
UFBGA	UFBGA 7x7x0.60 100L	E0MJ*435CSXZ	90nm eFlash Generic TSMC	1
UFBGA	UFBGA 5X5X0.6 64L	212I*455CSXA	TN040CE TSMC	1
UFBGA	UFBGA 7x7x0.60 100L	21MJ*455CSXA	TN040CE TSMC	1
UFBGA	UFBGA10x10x0.6 176+25L	2AMR*419QCX4	CMOSM10 Crolles 300	1

### 2.2 Traceability

#### 2.2.1 Wafer fab information

**Table 1**

Wafer fab information	
FAB1 die 450	
Wafer fab name / location	CROLLES 300 / FRANCE
Wafer diameter (inches)	12
Wafer thickness (µm)	775 +/-25
Silicon process technology	CMOS040
Number of masks	51
Die finishing front side (passivation) materials	PSG + NITRIDE
Die area (Stepping die size) (µm)	4983 x 4662
Die pad size (X,Y) (µm)	54.9 x 54.4
Sawing street width (X,Y) (µm)	72 x 72
Metal levels/Materials/Thicknesses (µm)	Metal 1 Cu 0.130 Metal 2 Cu 0.140 Metal 3 Cu 0.140 Metal 4 Cu 0.140 Metal 5 Cu 0.140 Metal 6 Cu 1.000 Metal 7 Cu 1.000 Metal 8 Ta/TaN/AlCu 1.450

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<b>FAB1 die 413</b>	
Wafer fab name / location	Fab 14 TSMC / TAIWAN
Wafer diameter (inches)	12
Wafer thickness (μm)	775 +/-25
Silicon process technology	CMOS010
Number of masks	42
Die finishing front side (passivation) materials/	USG + NITRIDE
Die area (Stepping die size) (μm)	4004 x 4258
Die pad size (X,Y) (μm)	59 x 123 and 63 x 73
Sawing street width (X,Y) (μm)	80 x 80
Metal levels/Materials/Thicknesses (μm)	Metal 1 TaN/Ta/CuSeed/Cu 0.220 μm Metal 2 TaN/Ta/CuSeed/Cu 0.280 μm Metal 3 TaN/Ta/CuSeed/Cu 0.280 μm Metal 4 TaN/Ta/CuSeed/Cu 0.280 μm Metal 5 TaN/Ta/CuSeed/Cu 0.280 μm Metal 6 Ta/TaN/AlCu 0.730 μm Metal 7 AlCu 1.200 μm
<b>FAB1 die 435</b>	
Wafer fab name / location	Fab 14 TSMC / TAIWAN
Wafer diameter (inches)	12
Wafer thickness (μm)	775 +/-25
Silicon process technology	90nm eFlash Generic
Number of masks	44
Die finishing front side (passivation) materials/	USG + NITRIDE
Die area (Stepping die size) (μm)	3176.4 x 3162.4
Die pad size (X,Y) (μm)	59 x 123
Sawing street width (X,Y) (μm)	80 x 80
Metal levels/Materials/Thicknesses (μm)	Metal 1 TaN/Ta/CuSeed/Cu 0.240 μm Metal 2 TaN/Ta/CuSeed/Cu 0.310 μm Metal 3 TaN/Ta/CuSeed/Cu 0.310 μm Metal 4 TaN/Ta/CuSeed/Cu 0.310 μm Metal 5 TaN/Ta/CuSeed/Cu 0.310 μm Metal 6 TaN/Ta/CuSeed/Cu 0.850 μm Metal 7 AlCu 1.450 μm
<b>FAB1 die 455</b>	
Wafer fab name / location	Fab 14 TSMC / TAIWAN
Wafer diameter (inches)	12
Wafer thickness (μm)	775 +/-25
Silicon process technology	N40_eFLASH
Number of masks	48
Die finishing front side (passivation) materials/	USG + NITRIDE
Die area (Stepping die size) (μm)	3406.4 x 3406.4

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Die pad size (X,Y) (μm)	54.9 x 55.38 54.9 x 54.9
Sawing street width (X,Y) (μm)	80 x 80
Metal levels/Materials/Thicknesses (μm)	Metal 1 Cu 0.125 μm Metal 2 Cu 0.145 μm Metal 3 Cu 0.145 μm Metal 4 Cu 0.145 μm Metal 5 Cu 0.145 μm Metal 6 Cu 0.850 μm Metal 7 Cu 3.500 μm Metal 8 Al 1.500 μm
<b>FAB1 die 419</b>	
Wafer fab name / location	CROLLES 300 / FRANCE
Wafer diameter (inches)	12
Wafer thickness (μm)	775 +/-25
Silicon process technology	CMOSM10ULP
Number of masks	42
Die finishing front side (passivation) materials/	PSG + NITRIDE
Die area (Stepping die size) (μm)	5582 x 4556
Die pad size (X,Y) (μm)	59x 123
Sawing street width (X,Y) (μm)	80 x 80
Metal levels/Materials/Thicknesses (μm)	Metal 1 TaN/CuSeed/Cu 0.240 μm Metal 2 TaN/CuSeed/Cu 0.330 μm Metal 3 TaN/CuSeed/Cu 0.330 μm Metal 4 TaN/CuSeed/Cu 0.330 μm Metal 5 TaN/CuSeed/Cu 0.330 μm Metal 6 TaN/CuSeed/Cu 0.850 μm Metal 7 AlCu/TinArc 1.450 μm

## 2.2.2 Assembly information

**Table 2**

<b>Assembly Information</b>	
<b>Package 1 – UFBGA 10x10 176 + 25L</b>	
Assembly plant name / location	ASE KH TAIWAN
Pitch (mm)	0.65
Die thickness after back-grinding (µm)	75 +/- 10
Die sawing method	Laser Grooving + Mechanical sawing
<b>Bill of Material elements</b>	
Substrate material/supplier/reference	UFBGA 10x10 176p25 P0.65
Die attach material/supplier	ABLESTICK ATB-125
Wire bonding material/diameter	CuPd 0.8mil
Balls metallurgy/diameter	BALLS WITH 200 DIAM SN96.5 AG3.5%
Molding compound material/supplier	KYOCERA G1250AAS ULA
Package Moisture Sensitivity Level (JEDEC J-STD020D)	MSL 3
<b>Package 3 – UFBGA 7x7 100L</b>	
Assembly plant name / location	ASE KH TAIWAN
Pitch (mm)	0.5
Die thickness after back-grinding (µm)	75 +/- 10
Die sawing method	Laser Grooving + Mechanical sawing
<b>Bill of Material elements</b>	
Substrate material/supplier/reference	UFBGA 7x7 100L P0.5
Die attach material/supplier	ABLESTICK ATB-125
Wire bonding material/diameter	Wire CuPd 0.8mil
Balls metallurgy/diameter	BALLS WITH 200 DIAM SN96.5 AG3.5%
Molding compound material/supplier	KYOCERA G1250AAS ULA
Package Moisture Sensitivity Level (JEDEC J-STD020D)	MSL 3
<b>Package 4 – UFBGA 5x5 64L</b>	
Assembly plant name / location	ASE KH TAIWAN
Pitch (mm)	0.5
Die thickness after back-grinding (µm)	75 +/- 10
Die sawing method	Laser Grooving + Mechanical sawing
<b>Bill of Material elements</b>	
Substrate material/supplier/reference	UFBGA64 5x5
Die attach material/supplier	ABLESTICK ATB-125
Wire bonding material/diameter	Wire CuPd 0.8mil
Balls metallurgy/diameter	BALLS WITH 200 DIAM SN96.5 AG3.5%
Molding compound material/supplier	KYOCERA G1250AAS ULA
Package Moisture Sensitivity Level (JEDEC J-STD020D)	MSL 3

### 2.2.3 Reliability Testing information

**Table 3**

Reliability Testing Information	
Reliability laboratory name / location	GRAL in Grenoble, RSST in Rousset, Muar BE Lab, Shenzhen BE Lab, ASE rel Lab

Note: ST is ISO 9001 certified. This induces certification of all internal and subcontractor labs.  
ST certification document can be downloaded under the following link:  
[http://www.st.com/content/st\\_com/en/support/quality-and-reliability/certifications.html](http://www.st.com/content/st_com/en/support/quality-and-reliability/certifications.html)

## 3 TESTS RESULTS SUMMARY

### 3.1 Lot Information

**Table 4**

Lot #	Diffusion Lot / Wafer ID	Die Revision (Cut)	Assy Lot / Trace Code	Raw Line	Package	Note
1	VQ950566	2.2	AA035013	E0MR*450CSXU	UFBGA 10x10 176+25L	
2	VQ004370	2.2	AA035014	E0MR*450CSXU	UFBGA 10x10 176+25L	
3	VQ934755	2.2	AA020197	E0MR*450CSXU	UFBGA 10x10 176+25L	
4	9R934182	1.1	AA028084	E2MR*413CSX4	UFBGA 10x10 176+25L	
5	9R013195	1.1	AA037094	E0MJ*435CSXZ	UFBGA 7x7 100L	
6	9R237401	1.0	AA329004	212I*455CSXA	UFBGA 5x5 64L	
7	9R237401	1.0	9R237401	21MJ*455CSXA	UFBGA 7X7 100L	
8	VQ310316	2.2	AA339006	24MR*450QCXV	UFBGA 10x10 176+25L	For monitoring
9	VQ315382	2.2	AA337005	2AMR*419QCX4	UFBGA 10x10 176+25L	

### 3.2 Test plan and results summary

**Table 5 – ACCELERATED ENVIRONMENT STRESS TESTS**

UFBGA 10x10 die 450

Test code	Stress method	Stress Conditions	Lots	S.S.	Total	Results/ Lot Fail/S.S.	Comments: (N/A =Not Applicable)
ESD CDM	ANSI/ESDA/ JEDEC JS-002	250V class C1	2	3	6	Lot1: 0/3 Lot8: 0/3	
PC	J-STD-020	24h bake@125°C, MSL3 (192h@30C/60%RH) 3x Reflow simulation Peak Reflow Temp= 260°C	4	308	1232	Lot1: 0/308 Lot2: 0/308 Lot3: 0/308 Lot8: 0/308	
TC	JESD22-A104	Ta=-65/150°C Duration= 500cyc  <input checked="" type="checkbox"/> After PC	4	77	308	Lot1: 0/77 Lot2: 0/77 Lot3: 0/77 Lot8: 0/77	
UHASt	JESD22-A118	Ta=130°C ,85% RH Duration= 96hrs  <input checked="" type="checkbox"/> After PC	4	77	308	Lot1: 0/77 Lot2: 0/77 Lot3: 0/77 Lot8: 0/77	
HTSL	JESD 22-A103	Ta=150°C, Duration= 1000hrs  <input checked="" type="checkbox"/> After PC	4	77	308	Lot1: 0/77 Lot2: 0/77 Lot3: 0/77 Lot8: 0/77	
THB	JESD 22-A101	Ta=85°C/85%RH VDD=3v6 Duration= 1000hrs <input checked="" type="checkbox"/> After PC	4	77	308	Lot1: 0/77 Lot2: 0/77 Lot3: 0/77 Lot8: 0/77	

Note: Test method revision reference is the one active at the date of reliability trial execution

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**UFBGA 10x10 die 413**

Test code	Stress method	Stress Conditions	Lots	S.S.	Total	Results/ Lot Fail/S.S.	Comments: (N/A =Not Applicable)
ESD CDM	ANSI/ESD/ STM 5.3.1	500V class II	1	3	3	Lot4: 0/3	
PC	J-STD-020	24h bake@125°C, MSL3 (192h@30C/60%RH) 3x Reflow simulation Peak Reflow Temp= 260°C	1	308	308	Lot4: 0/308	
TC	JESD22-A104	Ta=-65/150°C Duration= 500cyc  <input checked="" type="checkbox"/> After PC	1	77	77	Lot4: 0/77	
UHAST	JESD22-A118	Ta=130°C ,85% RH Duration= 96hrs  <input checked="" type="checkbox"/> After PC	1	77	77	Lot4: 0/77	
HTSL	JESD 22-A103	Ta=150°C, Duration= 1000hrs  <input checked="" type="checkbox"/> After PC	1	77	77	Lot4: 0/77	
THB	JESD 22-A101	Ta=85°C/85%RH VDD=3v6 Duration= 1000hrs <input checked="" type="checkbox"/> After PC	1	77	77	Lot4: 0/77	

Note: Test method revision reference is the one active at the date of reliability trial execution

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**UFBGA 7x7 die 435**

Test code	Stress method	Stress Conditions	Lots	S.S.	Total	Results/ Lot Fail/S.S.	Comments: (N/A =Not Applicable)
ESD CDM	ANSI/ESD/ STM 5.3.1	250V class C3	1	3	3	Lot5: 0/3	
PC	J-STD-020	24h bake@125°C, MSL3 (192h@30C/60%RH) 3x Reflow simulation Peak Reflow Temp= 260°C	1	308	308	Lot5: 0/308	
TC	JESD22-A104	Ta=-65/150°C Duration= 500cyc  ☑ After PC	1	77	77	Lot5: 0/77	
UHAST	JESD22-A118	Ta=130°C ,85% RH Duration= 96hrs  ☑ After PC	1	77	77	Lot5: 0/77	
HTSL	JESD 22-A103	Ta=150°C, Duration= 1000hrs  ☑ After PC	1	77	77	Lot5: 0/77	
THB	JESD 22-A101	Ta=85°C/85%RH VDD=3v6 Duration= 1000hrs ☑ After PC	1	77	77	Lot5: 0/77	

Note: Test method revision reference is the one active at the date of reliability trial execution



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**UFBGA 5x5 die 455**

Test code	Stress method	Stress Conditions	Lots	S.S.	Total	Results/ Lot Fail/S.S.	Comments: (N/A =Not Applicable)
ESD CDM	ANSI/ESD/ STM 5.3.1	250V class C3	1	3	3	Lot6: 0/3	
PC	J-STD-020	24h bake@125°C, MSL3 (192h@30C/60%RH) 3x Reflow simulation Peak Reflow Temp= 260°C	1	308	308	Lot6: 0/308	
TC	JESD22-A104	Ta=-65/150°C Duration= 500cyc  ☑ After PC	1	77	77	Lot6: 0/77	
UHASt	JESD22-A118	Ta=130°C ,85% RH Duration= 96hrs  ☑ After PC	1	77	77	Lot6: 0/77	
HTSL	JESD 22-A103	Ta=150°C, Duration= 1000hrs  ☑ After PC	1	77	77	Lot6: 0/77	
THB	JESD 22-A101	Ta=85°C/85%RH VDD=3v6 Duration= 1000hrs ☑ After PC	1	77	77	Lot6: 0/77	

Note: Test method revision reference is the one active at the date of reliability trial execution

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**UFBGA 7x7 die 455**

Test code	Stress method	Stress Conditions	Lots	S.S.	Total	Results/ Lot Fail/S.S.	Comments: (N/A =Not Applicable)
ESD CDM	ANSI/ESD/ STM 5.3.1	250V class C3	1	3	3	Lot7: 0/3	
PC	J-STD-020	24h bake@125°C, MSL3 (192h@30C/60%RH) 3x Reflow simulation Peak Reflow Temp= 260°C	1	308	308	Lot7: 0/308	
TC	JESD22-A104	Ta=-65/150°C Duration= 500cyc  <input checked="" type="checkbox"/> After PC	1	77	77	Lot7: 0/77	
UHAST	JESD22-A118	Ta=130°C ,85% RH Duration= 96hrs  <input checked="" type="checkbox"/> After PC	1	77	77	Lot7: 0/77	
HTSL	JESD 22-A103	Ta=150°C, Duration= 1000hrs  <input checked="" type="checkbox"/> After PC	1	77	77	Lot7: 0/77	
THB	JESD 22-A101	Ta=85°C/85%RH VDD=3v6 Duration= 1000hrs <input checked="" type="checkbox"/> After PC	1	77	77	Lot7: 0/77	

Note: Test method revision reference is the one active at the date of reliability trial execution

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**UFBGA 10x10 die 419**

Test code	Stress method	Stress Conditions	Lots	S.S.	Total	Results/ Lot Fail/S.S.	Comments: (N/A =Not Applicable)
ESD CDM	ANSI/ESD/ STM 5.3.1	500V class II	1	3	3	Lot9: 0/3	
PC	J-STD-020	24h bake@125°C, MSL3 (192h@30C/60%RH) 3x Reflow simulation Peak Reflow Temp= 260°C	1	308	308	Lot9: 0/308	
TC	JESD22-A104	Ta=-65/150°C Duration= 500cyc  ☑ After PC	1	77	77	Lot9: 0/77	
UHAST	JESD22-A118	Ta=130°C ,85% RH Duration= 96hrs  ☑ After PC	1	77	77	Lot9: 0/77	
HTSL	JESD 22-A103	Ta=150°C, Duration= 1000hrs  ☑ After PC	1	77	77	Lot9: 0/77	
THB	JESD 22-A101	Ta=85°C/85%RH VDD=3v6 Duration= 1000hrs ☑ After PC	1	77	77	Lot9: 0/77	

Note: Test method revision reference is the one active at the date of reliability trial execution

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**Table 8 – PACKAGE ASSEMBLY INTEGRITY TESTS**

Test code	Method	Tests Conditions	Lots	S.S.	Total	Results/ Lot Fail/S.S.	Comments: (N/A =Not Applicable)
CA	JESD B100/ B108 Internal ST specifications	Construction Analysis including Physical dimensions and BS/PT	7	50	350	Lot3 Lot4 Lot5 Lot6 Lot7 Lot8 Lot9	SHZ_CA_20-00046 Muar_CA-48-1020 SHZ_CA_21-00060 Muar_CA_23-00035 Muar_CA_23-00034 MDG Muar_24-00002 MDG Muar_23-00050

#### 4 APPLICABLE AND REFERENCE DOCUMENTS

Reference	Short description
JESD47	Stress-Test-Driven Qualification of Integrated Circuits
SOP2.4.4	Record Management Procedure
SOP2.6.2	Internal Change Management
SOP2.6.7	Finished Good Maturity Management
SOP2.6.9	Package & Process Maturity Management in BE
SOP2.6.11	Program Management for Product Development
SOP2.6.17	Management of Manufacturing Transfers
SOP2.6.19	Front-End Technology Platform Development and Qualification
DMS 0061692	Reliability Tests and Criteria for Product Qualification
ANSI/ESDA JEDEC JS-002	Electrostatic discharge (ESD) sensitivity testing charge device model (CDM)
JESD 22-A103	High Temperature Storage Life
J-STD-020	Moisture/reflow sensitivity classification for non-hermetic solid state surface mount devices
JESD22-A113	Preconditioning of non-hermetic surface mount devices prior to reliability testing
JESD22-A118	Unbiased Highly Accelerated temperature & humidity Stress Test
JESD22-A104	Temperature cycling
JESD22-A101	Temperature Humidity Bias
JESD B100/ B108	Physical dimension

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## 5 GLOSSARY

Reference	Short description
PC	Preconditioning (solder simulation)
THB	Temperature Humidity Bias
TC	Temperature cycling
uHAST	Unbiased Highly Accelerated Stress Test
HTSL	High temperature storage life
DMS	ST Advanced Documentation Controlled system/ Documentation Management system
ESD CDM	Electrostatic discharge (charge device model)
CA	Construction Analysis
BS	Ball Shear
PT	Pull Test

## 6 REVISION HISTORY

Rev	Author	Content description	Approval List			
			Function	Location	Name	Date
1.0	Celine NAVARRO	Initial Release	Division Q&R Responsible	RSST	Pascal NARCHE	29th March 2022
2.0	Celine NAVARRO	Added PCN14206	Subgroup Q&R Responsible	RSST	Pascal NARCHE	13th September 2023
3.0	Celine NAVARRO	Added die 455– 450– 419	Subgroup Q&R Responsible GPM BE Q&R Manager	RSST	Pascal NARCHE Berengere ROUTIER	3 <sup>rd</sup> May 2024

***Quality & Reliability –MCD–GPM***  
***ASE Kaohsiung (Taiwan) xFBGA package Bonding Wire***  
***procurement flexibility – Reliability Evaluation Report***

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**PCN Title :** ASE Kaohsiung (Taiwan) FBGA package copper palladium bonding wire introduction on STM32H72/73x, STM32H74/75x and STM32U5x listed products.

**PCN Reference :** MDG/24/14645

**Subject :** Public Products List

Dear Customer,

Please find below the Standard Public Products List impacted by the change.

STM32H733ZGI6	STM32H742XIH6	STM32H745XIH3
STM32U575QII3TR	STM32H742XGH6	STM32U575QII6
STM32H755XIH3	STM32U575QGI6	STM32U575QGI3
STM32U585QII6TR	STM32U5A5AJH6	STM32U545VEI6
STM32H723ZEI6	STM32U585AII6Q	STM32U575QGI3TR
STM32U585QII6	STM32U575QII3	STM32H745XIH3TR
STM32U585QII3	STM32U585QII3TR	STM32H745XIH6TR
STM32H757XIH6A	STM32U5A5AJH6TR	STM32H725IGK6
STM32U535VCI6Q	STM32U535VCI6	STM32H753XIH6TR
STM32U545VEI6Q	STM32H747XGH6	STM32U585QII6QTR
STM32H755XIH6TR	STM32U585QII6Q	STM32U575QGI6Q
STM32U5A5AJH3	STM32H725IEK6	STM32H743XGH6
STM32H750XBH6	STM32U5A5QJI6	STM32U575AII6Q
STM32U535REI6Q	STM32U535VEI6Q	STM32U5A9NJH6Q
STM32U535VEI6	STM32H757XIH6	STM32U585AII6QTR
STM32H743XIH6	STM32H755XIH6	STM32U595QJI6
STM32H747XIH6	STM32U595AIH6	STM32H753XIH6
STM32U545REI6	STM32H725IGK3TR	STM32H745XIH6
STM32U5A5QJI6Q	STM32U545REI6Q	STM32U595QJI6QTR
STM32H745XGH6	STM32U5G9ZJJ6Q	STM32U5A5AJH3TR
STM32U575QII6TR	STM32U595AIH6Q	STM32U535RCI6Q
STM32U595QII6	STM32U595AJH6Q	STM32U535RBI6Q
STM32U5A5AJH6Q	STM32U5A5QII3Q	STM32U575QGI3Q
STM32U575AGI6Q	STM32U595AJH6	STM32U585QII3Q
STM32U585AII6	STM32U575AGI6TR	STM32U575QGI6TR
STM32U595QJI6Q	STM32U585AII3	STM32U5F9NJH6Q
STM32U535VEI3TR	STM32U599NIH6Q	STM32U595AJH3
STM32H730IBK6Q	STM32U599NIH6QTR	STM32U5A9NJH3QTR
STM32U535VEI3	STM32H730ZBI6	STM32U585AII6TR
STM32U585QII3QTR	STM32U5A9NJH3Q	STM32H725AGI3TR
STM32U5A5QJI3Q	STM32H725IGK3	STM32H735IGK3
STM32H755XIH3TR	STM32H725AEI6	STM32U575AII6
STM32U535REI6TR	STM32H735AGI6	STM32U575AGI6
STM32H725AGI6	STM32U595QII6Q	STM32U599NJH6Q
STM32H730ABI6Q	STM32U575QII6Q	STM32U535REI6



## Public Products List

STM32H735IGK6	STM32H725AGI3	STM32H723ZGI6
STM32U5F9ZJJ6Q	STM32H730IBK6QTR	STM32U5G9NJH6Q



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## PRODUCT/PROCESS CHANGE NOTIFICATION

### PCN14645 – Additional information

**ASE Kaohsiung (Taiwan) FBGA package copper palladium bonding wire introduction on STM32H72/73x, STM32H74/75x and STM32U5x listed products.**

#### MDRF – General Purpose Microcontrollers Division (GPM)

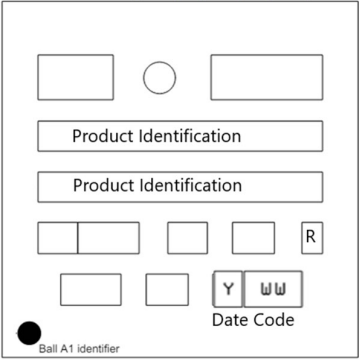
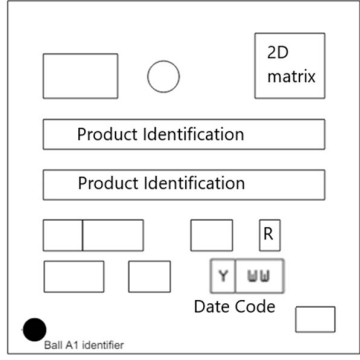
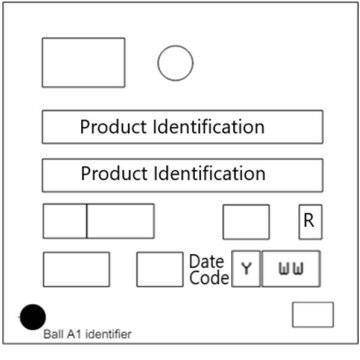
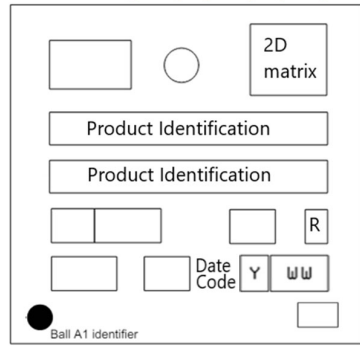
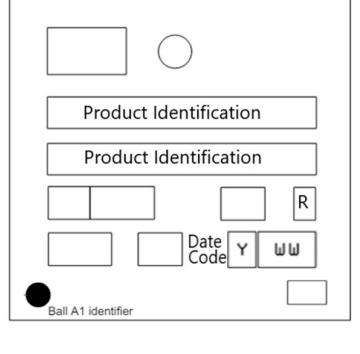
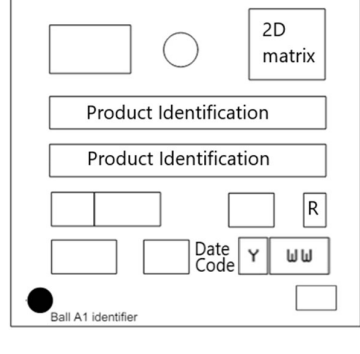
##### What are the changes?

Changes described in table below:

	Existing back-end line		Added back-end line
Assembly site	AMKOR ATP (Philippines)		ASE Kaohsiung (Taiwan)
Molding Compound	GE100LFCS		KYOCERA G1250AAS
GLUE	Ablebond GLUE 2300	Nitto EM-760L2-P	Ablestick ATB-125 / Ablestick ATB-125(30) / Ablestick 2100AC
Wire	Gold 0.8mil		Copper Palladium 0.8mil
Marking composition	Without 2D		With 2D
PP code on marking	7B		GQ

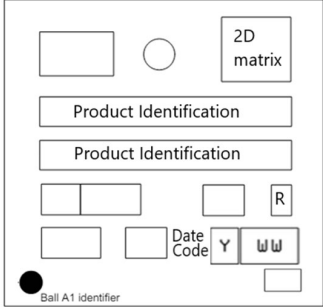
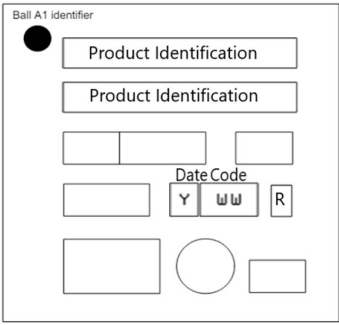
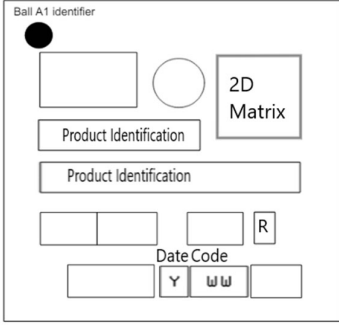
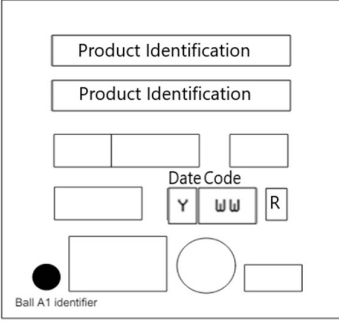
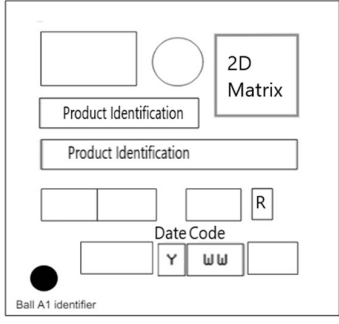
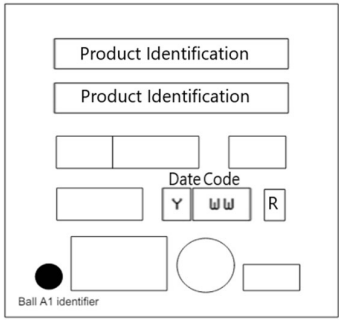
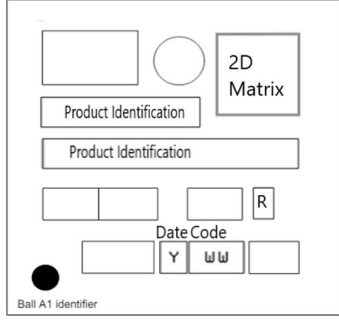
## How can the change be seen?

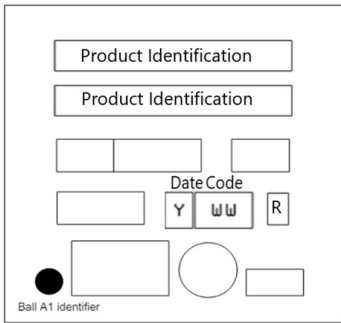
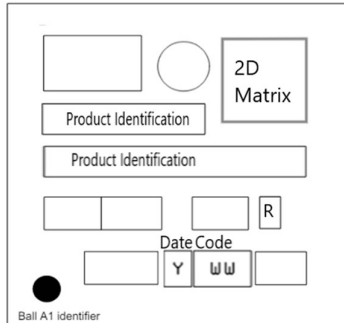
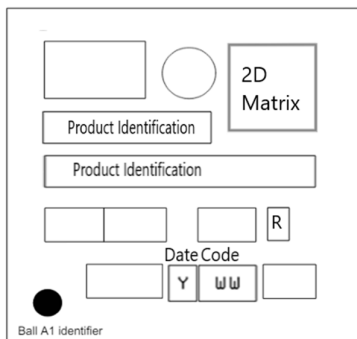
Top view example marking for BGA package.

Impacted Package	Current marking composition example	New marking composition example
TFBGA14x14 240+25L	<p>TFBGA240+25 marking example (package top view)</p> 	<p>TFBGA240+25 marking example (package top view)</p> 
TFBGA 13x13 216L	<p>TFBGA216 marking example (package top view)</p> 	<p>TFBGA216 marking example (package top view)</p> 
UFBGA 10X10 176+25L	<p>UFBGA176+25 marking example (package top view)</p> 	<p>UFBGA176+25 marking example (package top view)</p> 



life.augmented

UFBGA 10X10 144L	<p>UFBGA144 marking example (package top view)</p> 	
UFBGA 7X7 169L	<p>UFBGA169 marking example (package top view)</p> 	<p>UFBGA169 marking example (package top view)</p> 
UFBGA 7X7 144L	<p>UFBGA144 marking example (package top view)</p> 	<p>UFBGA144 marking example (package top view)</p> 
UFBGA 7x7 100L	<p>UFBGA100 marking example (package top view)</p> 	<p>UFBGA100 marking example (package top view)</p> 

<p>UFBGA 7X7</p> <p>132L</p>	<p>UFBGA132 marking example (package top view)</p>  <p>The diagram shows the top view of a UFBGA132 package. It features two 'Product Identification' labels at the top. Below them are two empty rectangular boxes. A 'Date Code' label is positioned above a row containing 'Y', 'WW', and 'R'. At the bottom left is a 'Ball A1 identifier' (a solid black circle), and at the bottom right is a large empty circle.</p>	<p>UFBGA132 marking example (package top view)</p>  <p>This diagram is similar to the previous one but includes a '2D Matrix' label in the top right corner. The 'Date Code' row contains 'Y', 'WW', and 'R'. A 'Ball A1 identifier' (solid black circle) is located at the bottom left.</p>
<p>TFBGA 7X7</p> <p>169L</p>	 <p>The diagram shows the top view of a TFBGA 7X7 169L package. It includes a '2D Matrix' label in the top right. Below it are two 'Product Identification' labels. Further down are two empty rectangular boxes, followed by a 'Date Code' label above a row with 'Y', 'WW', and 'R'. A 'Ball A1 identifier' (solid black circle) is at the bottom left.</p>	

**Y WW** : Year Week (manufacturing date)

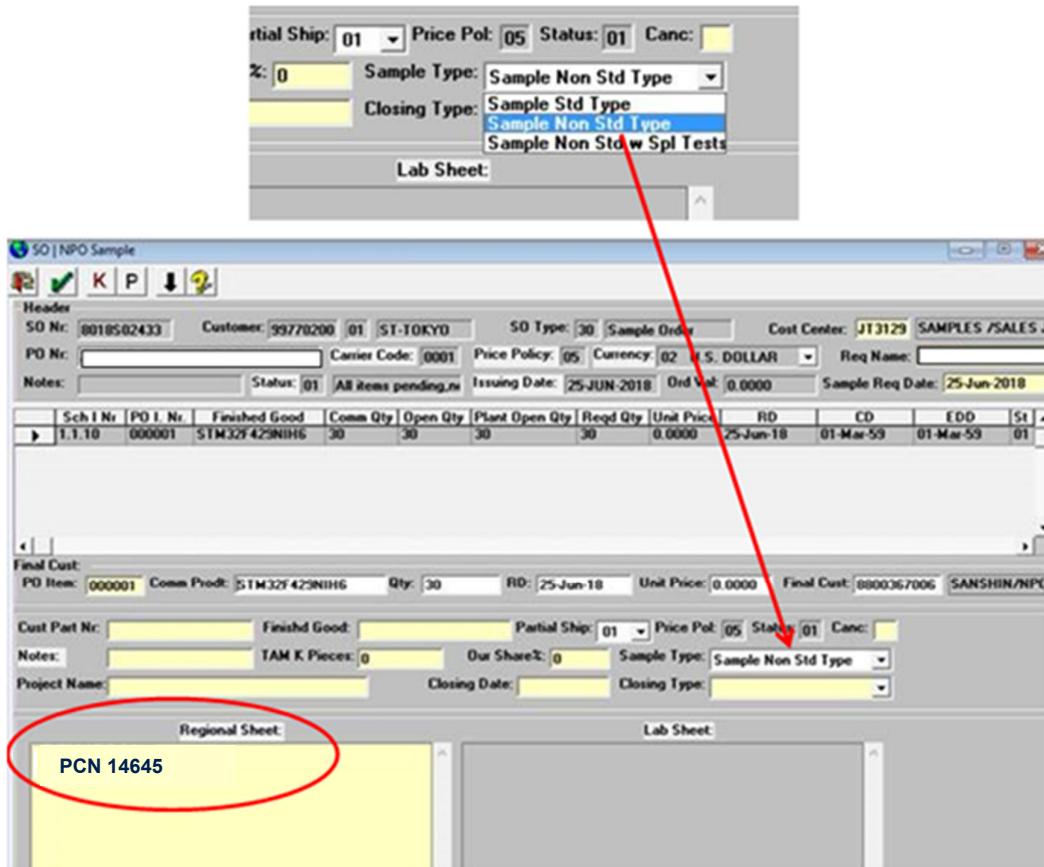
**PP** : Assembly Plant code

Please refer to Technical Note **TN1433** for package 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 "**PCN14645**" into the NPO Electronic Sheet/**Regional Sheet**.
- request sample(s) through Notice tool, indicating a single Commercial Product for each request.



The screenshot displays the 'NPO Sample' software interface. At the top, a dropdown menu for 'Sample Type' is open, showing 'Sample Non Std Type' as the selected option. Below this, the 'Closing Type' dropdown is also open, showing 'Sample Non Std Type' as the selected option. A red arrow points from the 'Sample Non Std Type' option in the 'Closing Type' dropdown to the 'Regional Sheet' section of the main form. The 'Regional Sheet' section contains a yellow box with the text 'PCN 14645' circled in red. The main form also includes fields for 'SO No.', 'Customer', 'SO Type', 'Cost Center', 'PO No.', 'Carrier Code', 'Price Policy', 'Currency', 'Req Name', 'Status', 'Issuing Date', 'Ord Val', 'Sample Req Date', 'Sch 1 No.', 'PO 1 No.', 'Finished Good', 'Comm Qty', 'Open Qty', 'Plant Open Qty', 'Reqd Qty', 'Unit Price', 'RD', 'CD', 'EDD', 'St', 'Final Cust', 'PO Item', 'Comm Prod', 'Qty', 'RD', 'Unit Price', 'Final Cust', 'SANSHIN/NPC', 'Cust Part No.', 'Finishd Good', 'Partial Ship', 'Price Pol', 'Status', 'Canc', 'Notes', 'TAM K Pieces', 'Our Share%', 'Sample Type', 'Closing Date', 'Closing Type', and 'Project Name'.

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