


PRODUCT / PROCESS CHANGE INFORMATION

1. PCI basic data

1.1 Company	 STMicroelectronics International N.V
1.2 PCI No.	MDG/23/13938
1.3 Title of PCI	AMKOR ATP (Philippines) CHANGE OF CARRIER TAPE SUPPLIER (Wi 16mm BGA 8x8) for TFBGA 8x8 100L products
1.4 Product Category	STM32G4x, STM32H7x, STM32F7x, assembled in BGA 8x8 package
1.5 Issue date	2023-05-16

2. PCI 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	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	New Indirect material part number (same supplier or different supplier): Boxes, trays, carriers, back grinding tape, wafer mounting tape, mold tape, etc..	AMKOR ATP (Philippines)

4. Description of change

	Old	New
4.1 Description	Current ST material code reference: - SID# 201305988 (CARRIER TAPE Wi 16mm BGA 8x8) supplied by PEAK	Change of supplier for ST material code reference: - SID# 201309188 (CARRIER TAPE Wi 16mm BGA 8x8) supplied by C-PAK
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	No impact on the commercial product	

5. Reason / motivation for change

5.1 Motivation	Current supplier Peak will discontinue carrier tape SID# 201305988
5.2 Customer Benefit	SERVICE IMPROVEMENT

6. Marking of parts / traceability of change

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

7.1 Date of qualification results	2023-05-03
7.2 Intended start of delivery	2023-06-26
7.3 Qualification sample available?	Not Applicable

8. Qualification / Validation

8.1 Description	13938 MDG-GPM-qualification.pdf		
8.2 Qualification report and qualification results	Available (see attachment)	Issue Date	2023-05-16

9. Attachments (additional documentations)
13938 Public product.pdf 13938 MDG-GPM-qualification.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
	STM32F745VEH6	
	STM32F765VGH6	
	STM32G473VEH6	
	STM32G473VEH6TR	
	STM32H743VIH6	

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PCI 13938 AMKOR ATP (Philippines) CHANGE OF CARRIER TAPE SUPPLIER (Wi 16mm BGA 8x8) for TFBGA 8x8 100L products

Qualification Report

May 3rd 2023

MDG GPM Product Test Engineering Department



Visual Inspection

CA/T BGA0808N PS3 22X6CY W16 P12 L500 (SID# 201309188) C-Pak Philippines

- Carrier Tape Visual Validation
 - Perform visual inspection on Carrier Tape (SS: 1 meter/roll).



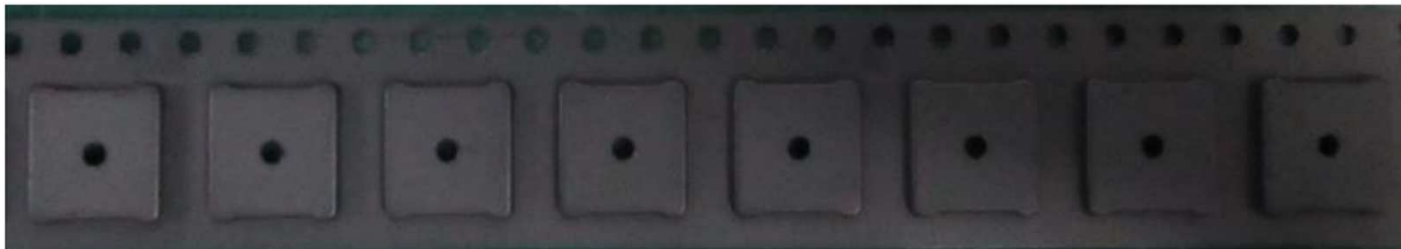
- Criteria: No visual defect on carrier tape like Foreign Material, Stain, Scratch, and Burr.
- Results:
 - Carrier tape passed visual Inspection.
 - No Foreign Material, Stain, Scratch and Burr was observed.
 - No deformed carrier tape pocket.

Visual Inspection

- Top Carrier Tape view



- Bottom Carrier Tape view



- Result:
 - No abnormality observed on Carrier tape and in good condition.

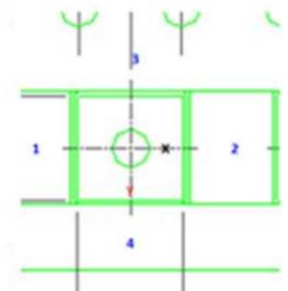
Visual Inspection

- Dimensional Inspection Result and Camber Test
 - Perform Dimensional check (SS: 3 pockets from 1 roll / lot)
 - Camber Test on Carrier Tape (SS: 250mm)

INSPECTION ITEMS		Specs	Tol.	Rdg 1	Rdg 2	Rdg 3	Average
Thickness	(t)	0.300	±0.05	0.29	0.28	0.29	0.29
Width	(W)	16.00	±0.30	16.04	16.03	16.03	16.03
Top Embossed Width	(Ao)	8.40	±0.10	8.42	8.43	8.43	8.43
Btm Embossed Width	(Bo)	8.40	±0.10	8.42	8.41	8.42	8.42
Btm Embossed Height	(Ko)	1.35	±0.10	note: below is the 4 corner dimension			
Sprocket Hole Size	(Do)	1.50	-0.00 / +0.10	1.511	1.536	1.534	1.53
Sprocket Hole Pitch	(Po)	4.00	±0.10	4.010	3.988	3.999	4.00
Embossed Pitch	(P)	12.00	±0.10	12.020	12.029	11.994	12.01
Chisel Distance	(Cd)	N/A	N/A	N/A	N/A	N/A	N/A
Chisel Height	(K1-K2, Ch)	N/A	N/A	N/A	N/A	N/A	N/A
Cross Bar Height	(Cb)	N/A	N/A	N/A	N/A	N/A	N/A

4 Corner reading (Ko)

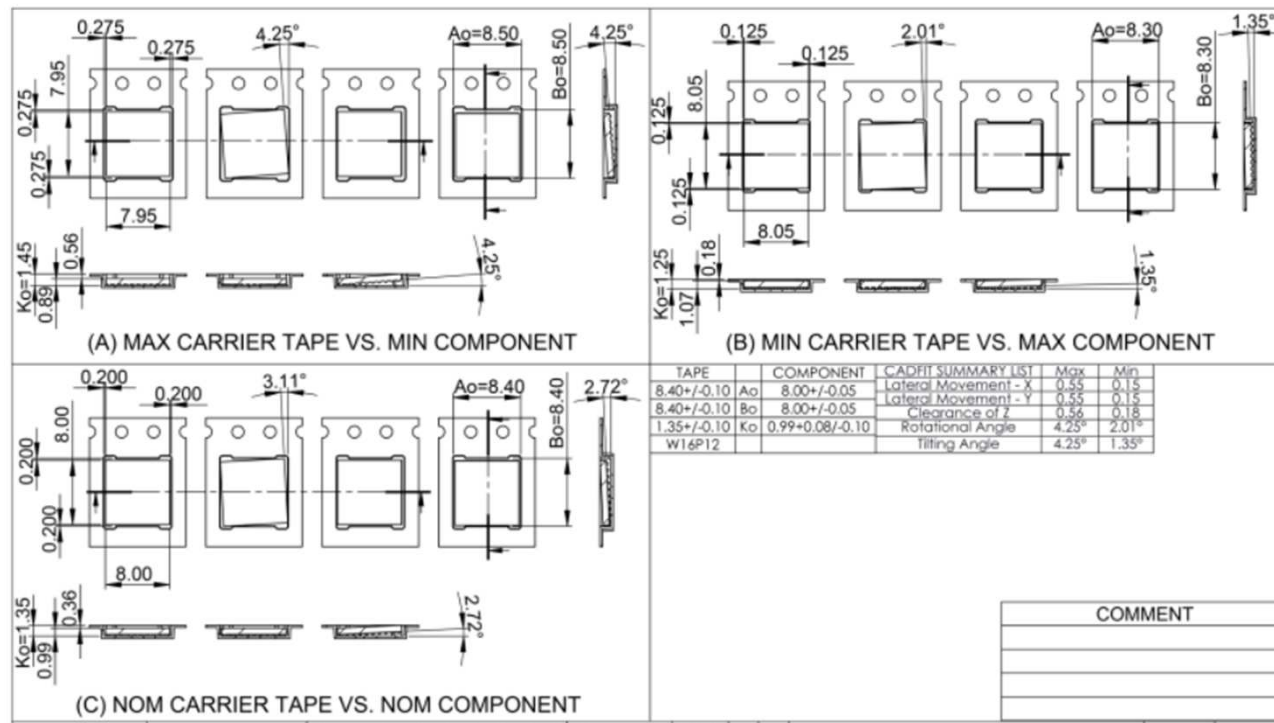
1	2	3	4
1.32	1.33	1.34	1.32
1.32	1.35	1.32	1.32
1.32	1.34	1.35	1.33



- Result:
 - Actual carrier tape dimensions are compliant with the carrier tape dimension specs.

CAD FIT Analysis

- CA/T BGA0808N PS3 22X6CY W16 P12 L500
 - Corner relief design changed from mouse ear to H, without affecting fit and function.



- Result: CAD FIT Simulation of CA/T BGA0808N PS3 22X6CY W16 P12 L500 with SID# 201309188 - Passed

Package Fitting

- Actual Unit Fitting in Carrier Tape:

ITEM	PHOTO
PACKAGE FITTING	

- Result:
 - Unit is properly seated in carrier tape pocket.
 - Dislodged unit is unlikely to happen.

Surface Resistivity Test

- ESD Measurement: Carrier Tape Surface Resistivity: Sample Size - 1 roll
- Surface resistivity:

Specs	Unit	Reading 1	Reading 2	Reading 3	Average	Remarks
$\leq 10^6$ exp	ohms/square	7.20E+05	5.50E+05	7.50E+05	6.73E+05	PASSED

- Result: Sample Carrier Tape Passed surface resistivity requirement.

Peel Strength Test

- Combine, Edge and Sprocket test: sample size -1 roll

Check Item	Requirement	Package	Condition	CpK			Result
				COMBINED	EDGE	SPROCKET	
Peel Strength Test	Individual readings 20-80gms CpK > 2.0	BGA 8x8	Peel test at Zero Time (Normal production environment)	2.491	9.528	11.778	Passed
Peel Strength Test	Individual readings 20-80gms CpK > 2.0	BGA 8x8	Peel test after 1 week (Normal Production environment)	3.11	7.813	10.836	Passed
Peel Strength Test	Individual readings 20-80gms CpK > 2.0	BGA 8x8	Peel test after 2 weeks (Normal Production environment)	2.536	8.809	8.061	Passed
Peel Strength Test	Individual readings 20-80gms CpK > 2.0	BGA 8x8	Peel test after 72 Hrs. (at 55°C 60%RH)	2.289	16.016	7.578	Passed

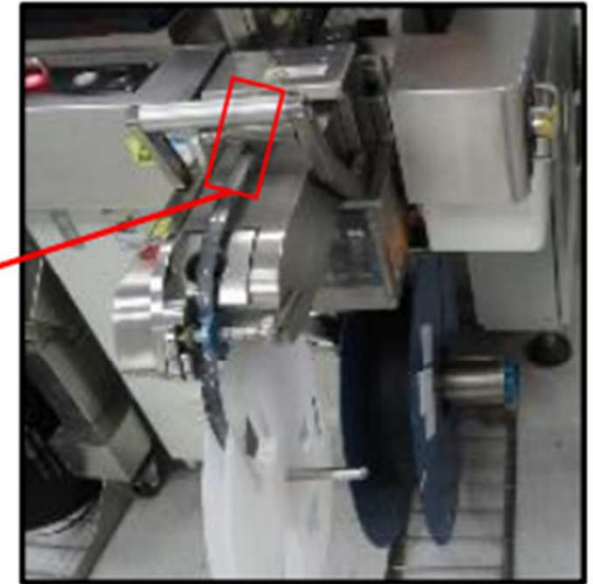
- Result:
 - Sample Carrier Tape Passed Peel Strength Test requirement per condition

Workability Test

- Machine Compatibility:



Carrier tape in taper with cover tape



Carrier tape Roll in Machine

- Results:
 - Carrier tape is properly fitted in machine taper
 - No abnormality encountered during carrier tape set-up
 - Passed

Visual Inspection/Detape Test

Items	Requirement	Actual	Remarks
No. of units in reel	2500	2500	PASSED
Leader length	Min. 400 mm	63 empty pockets (>400 mm)	PASSED
Trailer length	Min. 160 mm	63 empty pockets (>400 mm)	PASSED
Sealing Quality	Continuous/No seal gap	No seal gap w/ continuous sealing	PASSED
Visual Inspection	Zero reject	No rejects found after 100% Post Reel inspection	PASSED
Machine Jam	0 jam related to material set-up	No machine jam encountered	PASSED
Detape Test	5 strips detape – No tearing/damage	No tearing / damage encountered	PASSED



Sealing quality is good & compliant to TNR requirement



Detape Test Passed – no Tearing & damaged found

- Results:
 - Sealing response is good and no abnormality seen.
 - No abnormality seen during visual and detape tests
 - Passed

Outgas Tests

- Reeled mechanical sample units and subject for bake @ 24 Hours (at 30'C 60%RH)



- Results:
 - All 6x sampled units passed visual inspection.
 - No Ball discoloration observed on mechanical sample units.
 - Passed

Summary

- Carrier Tape Qualification
 - No abnormality observed on Carrier tape and in good condition
 - Actual carrier tape dimensions are compliant with the carrier tape dimension specs.
 - Unit is properly seated in carrier tape pocket. No dislodge
 - Sample Carrier Tape Passed surface resistivity requirement
 - Sample Carrier Tape Passed Peel Strength Test requirement per condition
 - Carrier tape passed Drop test requirement:
 - Outer and Inner Box remains intact, Deep scoring seen but no breakage/damage found.
 - Packed materials remains intact, no punctured was seen on the bag and no loose vacuum was found.
 - No dislodged unit, damage reel, damage carrier tape, damage cover tape found on tape and reeled units
 - All three Specimens passed machine lead scan post-drop test
 - Carrier tape is properly fitted in machine taper
- CONCLUSION:
 - Carrier Tape CA/T BGA0808N PS3 22X6CY W16 P12 L500 (SID# 201309188) Passed Visual Inspection.
 - No abnormality encountered during carrier tape set-up

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PCI Title : AMKOR ATP (Philippines) CHANGE OF CARRIER TAPE SUPPLIER (Wi 16mm BGA 8x8) for TFBGA 8x8 100L products

PCI Reference : MDG/23/13938

Subject : Public Products List

Dear Customer,

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

STM32G473VEH6	STM32F745VEH6TR	STM32F765VGH6
STM32F765VGH6TR	STM32H743VIH6	STM32F745VEH6
STM32G473VEH6TR	STM32H743VIH6TR	STM32H742VIH6
STM32H742VIH6TR		

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